



Pieter Bakker

Postmodern Numbers

**Ruth Tatlow on
Proportions in the Written Music of
Johann Sebastian Bach**

KUNSTEN WETENSCHAP

machen kan: zumahl bey der allgemeinen Einrichtung eines Wercks. Und niemol es das Ansehen gemunter, als ob diese Beschaffenheit das Verfahren derjenigen bilde, die ihren Vriem sonst nicht, denn ein ausnehmendes Da Capo zu geben wissen, dabey der Anfang und das Ende gleich stark, das Mittel aber offtl. flimmerlich aussiehet; so taugt doch eine solche Disposition deswegen nicht, weil sie mehr auf besondere ganze Theile, als auf das allgemeine Wohlwollen des Vortrages gerichtet ist: wie denn das erwehnte Kunst-Stück selbst nicht sonder von einer generalen, als vielmehr specialen Einrichtung solcher gestalt zu verstehen ist, doch nemlich alle Theile überhanpt, ein jeder vor sich, solche drey Stufen der schwächern, stärckern und stärcksten Gründe zu beschützen hat.

§. 26.

Obgleich wol mag auch hierin Maas und Ziel gesetzt werden, daß man einer Seits der Sache weder zu viel, noch zu wenig thue; andrer Seits aber besagte Maas doch dabey in ihrer Krafft laße: welches alldem geschieht, wenn man ein Werk vorher wol eintheilet und gleichsam abgemesset, ehe zur Ausarbeitung geschritten wird. Die meisten Componisten, wenn nur ein vermeinter guter Einfall da ist, fahren gleich, so zu reden mit ungenossenen Händen, zur Ausarbeitung; es gerathe nun damit wie es wolle: da doch die künge Vorsicht unumgänglich erfordert, in allen Dingen etwan abentheuerlichen Uberschlag zu machen, ehe man zum Werke schreitet.

§. 27.

Bev Verfertigung grosser Dramen wisset man Gebrauch zu seyn, den Schluß des ganzen Wercks zuerst vorzunehmen, und denselben, bey noch frischer und unermüdeter Krafft der Geister, jedoch mit einer gewissen Rücksicht auf das übrige, also einzurichten, daß er soas rechts sein mögte. Ein jeder folge seinem Triebe: ich erwehne dieses nicht aus Eitelkeit, noch zur Verherrlichung; sondern bloß darum, weil ich mich iberzeit wol dabey befunden, und die Zubörer vor allen Dingen am Ende, wo es auch am nöthigsten ist, ohne Mühen zu melden, so gerühret habe, daß vieles davon in ihrem Gedächtniß Wurzel geschlagen hat.

§. 28.

Von dem weltberühmten Steffani habe mir ehemals sagen lassen, daß derselbe, ehe er noch eine Feder angefaßt, die Oper, oder das vorhandene Werk, wie es von dem Poeten abgetzasset worden, eine Zeitslang behändig bey sich getragen, und gleichsam eine recht-ausführliche Abrede mit sich selbst genommen habe, wie und welcher Gestalt die ganze Sache am nützlichsten eingerichtet werden mögte. Hernach aber hat er seine Säge zu Papier gebracht. Es ist eine gute Weise; obgleich zu vermuten, daß sich heut zu Tage, wo alles auf der Rucht geschehen muß, wenig finden werden, die Befallen tragen, solche Ueberlegungen anzustellen: es sey nun im Verstand, oder Gemächlichkeit, oder auch ein albernem Hochmuth Schuld daran.

§. 29.

Wenn inwohnen die Gleichförmigkeit in allen Dingen ein großes beiträgt, daß dieselbe nicht nur den menschlichen Sinnen angenehmer, sondern auch eben dadurch an sich selbst dauerhaftere werden, wie solches guten Dammeistern wol bewußt seyn wird: so ist leicht zu erachten, warum einige Sachen, mit dem Alter, wenig oder nichts an ihrer innerlichen Güte und Festigkeit verlieren, ob sie gleich von außen einen kleinen Anstoß bekommen mögten, andre hingegen, so sehr sie auch glänzen und pralen, alsbald in der Wiege ihr Grab finden. Das liegt größtentheils an der guten oder bösen Einrichtung.

§. 30.

Wer sich also, seiner Fertigkeit im Zehen ungewohnt, der überwehnten Methode, auf gerichte weise ungewohnte Art bedienen will, der entwerfe etwa auf einem Bogen ein völliges Vorbauken, reisse es auf das größte ab, und richte es ordentlich ein, ehe und bevor er zur Ausarbeitung schreitet. Meines wenigsten Erachtens ist dieses die allerbeste Weise, dadurch ein Werk sein rechtz Geschick bekömmt, und jeder Theil so abgemessen werden kan, daß er mit dem andern eine gewisse Verhältniß, Gleichförmigkeit und Uebereinstimmung darlege: maassen dem Oberen nicht auf der Welt lieber ist, denn das.

§. 31.

Zeit und Geburt wollen dazu gehören; wer die nicht hat, der wird geschwinde davon kommen, wenn er nur so vor der Faust wegschreibet, wie die meisten thun, welche sich weder um das allgemeine noch besondere Einrichtungs-Weisen im geringsten bekümmern: daher es denn auch

Pieter Bakker

Postmodern Numbers

**Ruth Tatlow on
Proportions in the Written Music of
Johann Sebastian Bach**

K U N S T E N W E T E N S C H A P

The photo on the cover was taken by the author

Dutch title:

Postmoderne getallen

Ruth Tatlow over getalsverhoudingen in de geschreven muziek van Johann Sebastian Bach

Translation:

Pleuke Boyce

Reproduction only by permission of
Stichting Kunst en Wetenschap
Smidstraat 12 – NL-8746 NG Schraard

© 2015 P.I. Bakker
ISBN 978-90-79151-16-5
NUR 663

Although books and articles about numbers in the work of Johann Sebastian Bach are part of a tradition, the transmission, it should be noted, dates no further back than the 1920s. At that time a study by Wilhelm Werker about the symmetry in the structure of the fugues of the *Well-Tempered Clavier* appeared. His analysis was very controversial, but nevertheless found a following in the work of Friedrich Smend, who was however, in contrast to Werker, especially interested in a symbolical interpretation. Since the 1950s, numerology, as an approach to the study of so-called baroque music and especially the music of Bach, has become more and more accepted. In the standard work, *Der Musikbegriff im deutschen Barock* by Rolf Dammann, numbers are a regular part of the story. In the Netherlands, choir conductors and organists in particular threw themselves into the study of numbers in Bach's work. The English musicologist Ruth Tatlow has warned about the imperfections of Smend's work and has been critical about the research results of Kees van Houten and Marinus Kasbergen, who, in the 1980s, created a stir in the Netherlands.¹ In her doctoral thesis and some short publications, Tatlow has given her own opinion about the numbers and especially the proportions in Bach's work. Now her long-promised and sizable book about the subject has appeared.

In 2007, Ruth Tatlow's publication about numbers in Bach, promised to be a milestone, was still going to be called *Bach's Numbers Explained*.² Two years later it was changed to *Bach's Numbers? A Riddle Unravelling*.³ In 2015, its final title is *Bach's Numbers – Compositional Proportion and Significance*. At first sight her claims seem to have become more modest, but in the work that has now appeared there is not much modesty.

Proportional parallelism

Boldly, Ruth Tatlow writes that she discovered the proportional parallels in Bach's work, after they had been missed by everyone for three-hundred years (p. 26). Her theory of proportional parallelism describes three qualities that Bach's compositions have (p. 26-30). In the first place the printed or finished works have a number of bars that is a multiple of 10, 100 or 1000. In the second place, Bach's name, in characters, parallel proportions or numbers, can be found in the form of the keys he used or the numbers that according to

a number alphabet can be found in various ways. The third and most important characteristic are the proportions of the number of bars within a movement, within a work and between works and collections of works. Each time these are the simple proportions 1 : 1, 1 : 2 and 2 : 3, that have been derived from the ratios of prime, octave and quint.

However, Tatlow doesn't want to be put in the same category as the number hunters in musicology who are aspiring to find the holy grail (p. 40).⁴ Next, she argues for a good method to empirically examine the material, in which, nevertheless, historical research is indispensable. Without external proof it can't be determined whether certain patterns have been put there on purpose by the composer (p. 33). Her external material consists mainly of contemporary music-theoretical and biographical sources. The argument roughly follows three steps. Her starting position is her assumption that there is a reason to suspect that there is a link between Bach and numbers (p. 4). She then connects the numbers from contemporary music-theoretical sources to the numbers of bars she has found in Bach (p. 7-11). Finally she believes, on the basis of a discussion between Johann Heinrich Buttstett and Johann Mattheson, that Bach aspired to perfect proportions in order to arrive at a transferable unity, that was perhaps meant for the hereafter (p. 11-14). The number alphabet and references to Bach's name are a part of that.

The question that comes before everything else is why a researcher would get the idea to start looking for consciously applied proportions, containing a certain message, in Bach's work. In connection with this, I have written earlier about Tatlow's research, with some irony, that we have here a case of serendipity.⁵ Her historical argumentation was not very thorough, but some research results seemed nevertheless remarkable. In her new book the historical basis has not become stronger while the now more elaborately presented analyses raise a lot of doubt.

Contemporary sources

The biographical source material gives no reason to think that Bach 'had something with numbers'. The opposite is even true. In his *Grundlage einer Ehren-Pforte*, Mattheson remarks that Bach taught him nothing about the mathematical basis of music.⁶ Carl Philipp Emanuel Bach and Johann Friedrich Agricola write in an *in memoriam* in Mizler's *Musicalischer Bibliothek* that Bach didn't go in for deep theoretical speculation.⁷ In Forkel's *Bach*

biography, nothing is said about Bach's supposed interest in numbers. Nowhere in contemporary music-theoretical sources is there mention of a connection between symbolic numbers or proportions and the number of bars. In the twentieth century, by for example Rolf Dammann, the numbers from Andreas Werckmeister's speculative interval theory and Bach's formal structure were mistakenly brought together. Dammann went so far as to inflate Werckmeister's word 'Music-Bau' by applying it to the structure and number of bars.⁸ Werckmeister, however, was referring only to intervals. Tatlow, in fact, joins Dammann in his misconception. Just like him she tries to fill the gap that has come into being by lack of a biographical source with a contemporary music-theoretical source that is interpreted the wrong way. Tatlow goes one step further and applies not only Werckmeister's theological interpretation of the interval ratios to the number of bars but also connects them to the well-known discussion between Mattheson and Johann Heinrich Buttstett about, among other things, solmization and musical numbers. To her it's about how compositions will live on in heaven. The perfect proportions in Bach's compositions have to do with the making of a perfect and transferable work, Tatlow thinks. But Buttstett and Mattheson are not at all talking about the continued existence of certain works, but about the continued existence of musical theory, with Mattheson remarking that Buttstett wants to force God to build his compositions on the syllables ut-re-mi-fa-sol-la of Guido of Arezzo (p. 379). This discussion has nothing to do with the possible existence of a written composition as an *opus perfectum et absolutum*.⁹

Erroneous translations

Of course, Tatlow bemoans the fact that no patterns with numbers have come down from Bach. So part of the evidence must have disappeared through the re-use of works. But much must also have been lost through modern English translations of present-day theoretical literature, that have missed the essence (p. 108). This last remark is strange, since the German sources have not disappeared, and it is especially striking as it is Tatlow herself who in many instances gives an erroneous translation. More than once, these are translations that form an essential part of her historical argumentation. The primary source is already lacking and now the historical evidence from other sources is undermined by her own translation mistakes.

Tatlow's main source for Bach's proportional parallelism is a quote from

Mattheson in which he advises the composer to make a sketch before he starts writing the actual composition and which he ends with this: '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 Erachtens ist dieses die allerbeste Weise, dadurch ein Werck sein rechtes Geschicke bekömmt, und ieder Theil so abgemessen werden kan, daß er mit dem andern eine gewisse Verhältniß, Gleichförmigkeit und Uibereinstimmung darlege.'¹⁰ According to Tatlow this should be translated as follows: '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 organize a work so that each part demonstrates a true proportion, uniformity and unison' (p. 14, 37, 109). To begin with, 'gewisse' shouldn't be translated as 'true' but as 'a certain'. The words 'auf gewisse ungezwungene Art' she completely leaves out. On the same page Mattheson uses the word 'gewiss' again, again with the meaning of 'a certain'. It's a word he uses a lot. The translation 'true' also doesn't conform with the fact that Mattheson advises against working with compass and ruler when writing a melody.¹¹

Next, Tatlow translates the word 'Übereinstimmung' the wrong way. Fritsch' eighteenth-century dictionary, that Tatlow quotes, gives as an example 'die übereinstimmung zweier music-noten': 'two notes that sound in unison'.¹² That, of course, doesn't mean that 'Übereinstimmung' should be translated as 'unison'. In fact, Tatlow, by way of her erroneous translations of Mattheson's words 'gewiss' and 'Übereinstimmung' is trying to force a link with the numbers of the interval proportions. But nowhere in the theoretical literature is there a connection being made between those numbers and parts of compositions. In this mistaken way, the proportions Tatlow has found in Werckmeister suddenly also apply to the number of bars.

Similarly as with 'Übereinstimmung' the word Gleichnüß in Werckmeister is translated as 'parallel' (p. 87, 370). That, of course, should be 'parable'. After that it says in Tatlow's translation that God is 'composed of a perfect Triad', while it says in the text: 'Der *da* bestehet aus einer Volkommenen Triade.'¹³ Without 'da' the pronouncement would be blasphemous. A reproach for blasphemy can for that matter be found in her quote from Mattheson, in

which the author faults Buttstett for wanting to force God to adhere to the solmization of Guido of Arezzo (p. 379). There Tatlow translates 'als wenn sie just nach den sechs Sylben ihre Composition einrichten werde und müsse' with 'as when one's compositions will and must be built solely on the six syllables'. The word 'sie' refers to 'die Allmacht'. So with Tatlow this reproach of blasphemy has disappeared.¹⁴

Buttstett defends himself against Mattheson's attack with a pamphlet. Above it is written: 'Mit seinem angebohrnen Insiegel bekräftiget.' Tatlow translates this as: 'Authorized by the Author's stamped seal' (p. 53). 'Angebohrnen' is left out. The whole following argument is therefore incorrect. Possibly Buttstett had wanted to make fun of Mattheson with the word 'animum' in the seal. Anise, Tatlow has found out for us, is a remedy against flatulence. So the seal would have been expressly made to insult Mattheson. 'One wonders who had the last laugh in the battle,' she adds. Oddly enough, it didn't occur to Tatlow, who has devoted herself a lot to word puzzles, that when you read 'animum' symmetrically from left to right and from right to left it turns into the word 'animus'. That would fit in nicely with 'anima' from the pamphlet's text.¹⁵ On top of that, the untranslated 'angebohrne' would then no longer be a problem. He has inherited the seal.

Tatlow makes a strange mistake when, in reference to the title page of the *Clavierübung*, she writes (p. 97): 'Although honouring God is not spelt out, it is implicit in the words Gemüths Ergoetzung.' But etymologically, 'ergötzen' or 'ergetzen' is not related to the word 'Gott', as it originally meant 'vergessen machen' which then became 'sich erfreuen'. Apparently she has copied Peter Williams' mistake (p. 202). He claims that Bach's words point to a 'pious offering'.¹⁶

Tatlow thinks incorrectly that the *numerus musicus* is about the ratio of the number of bars (p. 110). And that the *numerus poeticus* is about the number of syllables, feet, lines and stanzas (p. 111). But here it is more a question of number rather than quantity. The concepts solely refer to textual treatment and metrical feet. Four of her sources are incorrectly interpreted here by Tatlow.¹⁷

Then there is confusion about the word 'Takt'. This is of course a crucial word in a book dealing with proportions of numbers of bars. Tatlow rightly remarks that one has to take care when translating the German word 'Takt', as the same word in a different context would have to be translated differently (p. 113, 114). Unfortunately, she herself makes the wrong choices. In the

fifth chapter of his *Praecepta der Musicalische Composition*, Johann Gottfried Walther describes 'Tact' as the sequence of arsis and thesis.¹⁸ In English this should not be translated as 'bar' but as 'time' or 'meter', while in the example of Mattheson, 'soll der Tacte Anzahl ein Verhalt haben', where Tatlow thinks of 'pulses', the better translation would be 'bar'.¹⁹ Walther also does not maintain, as Tatlow thinks, that the 'ungleiche Tact', the irregular time signature, is unpleasant, but that the use of certain time signatures, which he does not discuss in his book, 1/4 or 6/1 for example, serves no purpose. Walther says at the end of his paragraphs about the 'Tact': 'Totius Musicae anima Tactus est.' Here Tatlow translates 'Tactus' as 'bar'. If Walther had really meant that, it would be a sign of a really poor musical outlook. This is one of the places where Tatlow's tunnel vision is painfully apparent. Later she returns to it: 'Proportional parallelism uses the soul of all music, the bar, to order the parts of a composition' (p. 128).

The English rendition of the German is in fact continually marred by a mixture of inadequate theoretical reflection and downright translation blunders. The problem is that Tatlow's historical argument, already just held together with pieces of string and elastic bands, gets undermined even further this way.

Incorrect interpretations

Apart from errors in translation, Tatlow's argument is plagued by many wrong interpretations of the sources. An important part of these mistakes is made because she confuses the objective ordering in works that are influenced by the aftereffects of humanism with the subjective esthetics of eighteenth-century sources. This way a connection is suggested, for example between the speculative interval theory and Mattheson's proportions, that in reality doesn't exist. What isn't mentioned at all is that Mattheson himself, as a typical representative of the new era, saw mathematics as an aide to science, in particular to physics.²⁰

And it is strange that Tatlow, who is so fond of translations that take their era into account, doesn't mention the fact that 'Verhältnis' is a new word in the eighteenth century and isn't found in seventeenth-century sources like Werckmeister.²¹ It occurs in Sulzer, who like Mattheson, doesn't describe the concept exactly but subjectively.²² A key word in her argument is the word 'Composition'. Nowhere does she point out the shift in meaning that

especially this word has undergone. For in Walther's *Lexicon* it still just means the combining and uniting of consonants and dissonants into a harmonic whole.²³

Several times in her book Tatlow mentions the *progressio arithmetica* as if it were a commonly used technical term (p. 14, 38, 115, 126, 127). Mattheson however uses the term only once, in a commentary on Friederich Erhard Niedt's *Musicalische Handleitung*.²⁴ One wouldn't easily find this term again anywhere in the music-theoretical literature. On top of that, Mattheson does not refer to divisions by number of bars, but is of the opinion that Niedt has put the cadenza in the wrong place. By not taking the *progressio arithmetica* into account, the sarabande in question hobbles, he finds. Tatlow, for that matter, translates 'alles hincket' suggestively as 'everything is lopsided' (p. 115).

Tatlow believes that Steffani, when constructing vocal works, started with the free-texted arias (p. 294).²⁵ In the *Vollkommene Capellmeister* it says however nothing about this. It only says that he carried the text with him and considered how he would put a composition together before he actually started writing it. Mattheson advises to make use of this method 'auf gewisse ungezwungene Art'.

Tatlow writes about the typical Lutheran outlook on the concept of harmony (p. 79). But she does not elaborate further and sources that could shine a light on the difference between Lutheran and non-Lutheran are not mentioned. Yet I suspect that Tatlow is relying here on the unmentioned article *Der Harmonie-Begriff in der lutherisch-barocken Musikanschauung* by Walter Blankenburg.²⁶ In the same connection, both authors use the same quote from Werckmeister's *Sendschreiben* that contains a translation of Steffani's *Quanta certezza habbia da suoi principii la musica*.²⁷ Mistakenly, Tatlow and Blankenburg contribute the quote to respectively Buttstett and Steffani. Buttstett himself actually also thought that the quote came from Steffani, something Mattheson in *Das Beschützte Orchestre* pointed out to him.²⁸ The cause of the mistake is that the letter size of the main text and the commentary had become mixed up, caused by a printing error in Werckmeister's foreword, which is again corrected in the list of misprints. Tatlow places herself in a grand tradition, for also Rolf Dammann made an error here, by contributing a passage by Steffani to Werckmeister.²⁹ For future generations I will mention again that it is Werckmeister's commentary that is printed in big letters.

Heaven as the final destination of the perfect and transferable work forms the end piece of Tatlow's historical argument. A question one could ask here is whether the concept of a finished composition already existed in the first half of the eighteenth century.³⁰ In any case, in her sources Tatlow continually mixes up speculative theoretical music with actual music practice. Unfortunately, it is exactly in the context of transferability that she makes several mistakes. Mattheson reproaches Buttstett in *Das Beschützte Orchestre* for wanting to force his music theory upon the Almighty.³¹ He is thereby referring to God's compositions in heaven and not to ones by humans (p. 379). Nor is Buttstett referring to music composed on earth that will be played in the hereafter, as Tatlow maintains (p. 92).³² And Mattheson's *Behauptung der Himmlische Musik* doesn't for one moment refer to the eternal continuation of 'the earthly efforts of the Christian composer' (p. 83). In Kittel's poem it says that Zelenka's music is a 'Vorschmack'.³³ It does not say anything else. In her translation of a quotation from *Kurtzer Entwurf von der Musik* by Heinrich Georg Neuss we find in this connection another serious translation error (p. 84, 381). Tatlow translates 'und bleibt die Andacht zurucke' as 'what remains is devotion'. So exactly the other way around.

Perhaps we shouldn't blame Tatlow for the somewhat mistaken use of the word *senarius*. When referring to Zarlino's *numero Senario*, music theorists often speak of 'the senario', probably because it sounds a lot like the word 'scenario', of which the spelling is sometimes even adopted.³⁴ But Tatlow goes one step further when she maintains that the fourth chapter of Werckmeister's *Der Edlen Music-Kunst Würde, Gebrauch und Mißbrauch* deals with the *senarius* and the *septenarius* being applied to God, eternity and mankind (p. 86). But in this book by Werckmeister, different from his other works, those words don't occur once. Then she tells us that in Werckmeister there are no classical references (p. 87). That isn't exactly right. In the beginning of his book he refers to Cassiodorus and Boethius in connection with the working of the modes.³⁵ But lots of references to the Bible and especially to Martin Luther are of course to be expected in a work defending church music. Tatlow, however creates the impression that a lack of ancient sources is typical of Werckmeister, although the opposite is true. Of the more than a hundred-and-thirty authors Werckmeister mentions in his writings, about thirty are from classical times. Those thirty can be found on hundreds of his pages.³⁶

It's not very hard to find more examples of wrong interpretations and other

mistakes. In fact, everything in *Bach's Numbers* is interpreted wrong or taken out of context. Tatlow says that theorists from Bach's time named Guido of Arezzo the discoverer of the 'musical triad' as a result of his solmization (p. 89). But in not one of the sources she puts forward does it say that exactly. In Jacob Adlung's *Anleitung zur der musikalischen Gelahrtheit* it only says that Guido was seen by some as the inventor of polyphonic music, but that this is wrong.³⁷ Tatlow thinks that solmization was seen as something almost holy. But Andreas Werckmeister was a declared opponent of solmization.³⁸ Johann Mattheson even expressed himself most disparagingly about solmization.³⁹

Then there are perhaps smaller but still irritating mistakes. Not Abraham Calov but Martin Luther translated the Bible (p. 86). Martha Dorothea Lämmerhirt was not the mother but the grandmother of Walther (p. 16). It is not 'tetrachys' but 'tetraktys' (p. 7). Even simple copying isn't always done correctly. In two translated quotations from Werckmeister, Tatlow's colleague Thomas Christensen does not use a capital for the word 'harmony' and in his text you read that God is a 'beginning without beginning or end' rather than a 'being without beginning' (p. 85).⁴⁰ Johann Sebastian Bach, in his letter to the council of Mühlhausen, also writes the French word 'harmonie' without a capital.⁴¹ In addition there are the small mistakes that must have been overlooked during the production process. It says for example: 'His scores will be impoverished if we ignore proportional parallelism' (p. 368). It's perhaps a bit childish to mention this, but it is funny.

Analyses

After Tatlow's historical account, the floodgates open. The reader is suddenly inundated with a barrage of numbers. In the part with her 'demonstrations', there's a lot of talk about different manuscripts versions to justify these numbers and about Bach's supposed plans and intentions and hidden messages via the number alphabet. The structure of the book resembles in this aspect Thijs Kramer's *Zahlenfiguren im Werk Johann Sebastian Bachs*. In the introductory argument there is still an appearance of reasonableness, but as soon as the numbers are mentioned there's no holding it. I differ from Tatlow in thinking that empirical evidence obtained from the research object does not necessarily have to be backed up by historical evidence. What is true, is true regardless. But it must then have a good methodological set-up with

professional statistical processing. Both are unfortunately lacking. Often it's only possible to meet those two conditions in a multidisciplinary setting, but collaboration with another field of expertise could be refreshing for musicology.

The way the results are presented here by Tatlow, means that the sympathetic reader can't do much with them. You either take it or leave it. In her diagrams she could for example have put the *Neue Bach-Ausgabe* as reference point beside her own numbers as the starting point of the calculations and after that have given the reason why there could be a possible difference. At first sight Tatlow's results are definitely remarkable. But once the reader adds up the bar totals of the reviewed works for himself, according to Tatlow's way of counting, the picture becomes less intriguing. And it becomes spectacular when all 'unlesses' and 'buts', what has been counted and what not, which version has been chosen and which one not, which works have been compared with each other and which ones not, in short, when also Tatlow's interpretation is taken into account.

Especially striking are the 2400 bars of Bach's *Six Solos for Violin* (BWV 1001-1006) (p. 135) These are then compared with the *Sonatas for Violin and Harpsichord* (BWV 1014-1019). They also have a total of 2400 bars. A perfect ratio of 1 : 1. In the first instance, however, repetitions are also counted and in the second instance they are not. Then there is the amazingly round number of 1000 bars for the *Inventions* (BWV 772-786) plus the *Sinfonias* (BWV 787-801) but for some reason minus the Sinfonia 15 (p. 167). Again, a powerful example are the *Six Cello Suites* (BWV 1007-1012) with a total of 4000 bars including the repetitions (p. 152). Gradually the examples become a bit less striking on average, but everywhere Tatlow keeps finding ratios of 1 : 1 and 1 : 2, not just within a group but also between separate groups. She often finds the desired outcome in numbers rounded off to 10, 100 and even 1000. The discovery of a reference to Bach's name in numbers or letters, whether according to the number alphabet or not, is mostly not a problem either. The three conditions of her theory of proportional parallelism are therefore mostly fulfilled.

In finding Bach's name Tatlow takes a rather liberal approach. She uses the fact that the b can be used as an h as a possibility to be satisfied with just three letters (p. 27). In collections in several keys one will quite easily find BAC when the other letters of the natural notes may also be used (p. 64, 140). The number equivalents 1-2-3 also stand for Bach's name that way, but

are only sometimes added and at other times not (p. 161). In connection with the number 14, the sum of b-a-c-h, Tatlow remarks that Bach was probably waiting for the fourteenth place in Mitzler's society because of this number (p. 208). She names Friedrich Smend as a source, someone she still deemed untrustworthy in an earlier publication.⁴² As if in a kind of trance created by self-hypnosis, to her everything that comes her way points into the direction she eagerly wishes to take.

The main argument against Tatlow's way of working is that it is not up to the mark methodologically. The main thing lacking is a statement with predictive value. Her theory has not led to the development of testible hypotheses, as I was still hoping at an earlier stage of her work. Everything still depends on the recurring remark in works about numbers, that 'this can't be a coincidence' (p. 172). The reader is overwhelmed by a mountain of numbers, but the burden of proof has in fact been reversed. We are implicitly invited to prove it isn't so, only there is no hypothesis that can be tested on its tenability. Her statements are in other words not falsifiable.

About fifteen years ago Tatlow started a research project into Bach's church cantatas, of which she gave an account in her article *Text, the Number Alphabet and Numerical Ordering in Bach's Church Cantatas*. She now says that 'strict methodological conditions' are necessary in order to continue this research (p. 325). One wonders if by now she hasn't had plenty of time for that. The manner of enquiry could in fact be a lot simpler than the one in her present book. Tatlow assumes that the number value of the text of the opening line is often the same as the number of bars of the whole work. It should be quite possible to research this empirically while making use of statistics. But the research has gone no further than some striking examples, after which we get the 'unlesses' and 'buts' and some vague calculations. It doesn't have to be about just the first line, it doesn't have to be about all the parts of the composition, et cetera. The fact is that nothing has been heard about this research in fifteen years. Again the well-known exclamation: 'Is this yet another chance correlation?'⁴³ That is indeed the question that should be answered. Not by us but by the researcher.

Tradition

Tatlow may be opposed to number hunters, but she herself is part of a tradition in this field, even apart from the fact that her parallel proportions are derived

from Don O. Franklin and the idea about the proportion of the number of bars of collections, made up of several pieces, from Ulrich Siegele.⁴⁴

There is a history of publications about numbers in Bach from Wilhelm Werker in the 1920s, via Friedrich Smend and generalists like Rolf Dammann and Walter Blankenburg up to our own time and the vast calculations of Thijs Kramer and Kees van Houten for example. All these publications, as if obeying an iron law, have the same characteristics. In the first place they give no tenable clues from biographical sources that Bach had ‘something with numbers’. In the second place they link the numbers from the interval theory by, in particular, Werckmeister, with the bar numbers of other things without coming up with a source from the theoretical literature of that time to back it up. In the third place, all these publications culminate in the exclamation: ‘This can’t be a coincidence!’ Exclamation point included. But this always without actually demonstrating that this *can’t* be a coincidence. Tatlow fits in seamlessly with her predecessors. It is odd that before the 1920s there was never a mention of this concept that Bach had something with numbers. It is now suggested that an ancient knowledge lies at the foundation of Bach’s numbers. But we are in fact talking about an *invented tradition*, just as the Christmas tree and the Dutch Black Pete are.

Tatlow and her predecessors have a lot in common, but not everything. I have written earlier that the beginning of the number research is strongly interwoven with modernism and a mentality that we find in theosophy.⁴⁵ The modern hankering for an objective and ideal world, as we find in Werker, returns in Smend in a christianized and more bourgeois form, where the numbers have become more fashionable. By the time of Dammann’s and Blankenburg’s work they are an accepted part of musicology. In Tatlow the esoteric element from the beginning period is still present, but times have changed. In a lecture she has argued for a holistic approach in the study of sources.⁴⁶ The harmony that Tatlow studies no longer has the same relationship with reality as it had for Werker, but seems to be more part of the new age spirit. In general, facts and objective reality seem to be receding. Typical for the 1970s was still the belief in ‘objective music’. That modern attitude has now changed. With Tatlow we are in certain sense experiencing the declining years of a spiritual movement. My prediction is that around 2022, a hundred years after Werker, the hunt for numbers will have come to an end. That’s what I hope in any case. Still, such an end can make one melancholic. For ‘it’s all about how you experience it’, as a starting point, is no

boon to scholarship either.

To divide something by two or three is in itself rather natural. When it appears that something like that is the case with Bach's number of bars, it isn't necessarily connected to universal harmony or esoterics. There may be a technical reason related to copying or printing, as Tatlow has also suggested.⁴⁷ The method Tatlow describes – the adding or omitting of bars to arrive at a useful number – has in any case nothing to do with the construction of periods or arrangement of a composition that Mattheson writes about.

Tatlow also remarks in connection with Bach's striving for perfect proportions that the modern reader might think that he was suffering from a compulsive disorder, but she believes that his behaviour was on par with his time (p. 367). There is a history of the human mind, the peculiar neurologist Jan Hendrik van den Berg already thought. In his opinion, which Tatlow apparently shares, it would have been anachronistic to regard a compulsive disorder as an abnormality in the eighteenth century. Each era has its own mindset. Thus, hysteria as an illness, would for example be typical of the nineteenth century.⁴⁸ I believe that we shouldn't distance ourselves too much from the historical person, or someone of genius. There are differences but also similarities. In the few biographical sources that we *do* have, Bach doesn't give the impression of being a compulsive person. He was a genius and at the same time a human being like anyone else. According to Hans-Joachim Schulze some exegetes underestimate Bach as a musician and overrate him as a kind of hybrid Leibniz or Einstein.⁴⁹ Something would be gained if the obvious and ordinary in a biography or other piece of writing wasn't immediately pushed aside as inferior. On the other hand, the greatness of an artwork can perhaps be better left unexplained, rather than having the dubious honour of being subjected to a primitive scholarly analysis. The brilliant Wolfgang Graeser already pointed out a hundred years ago that musicology, with the means it had at its disposal, couldn't possibly come up with a good formal explanation of the *Kunst der Fuge*.⁵⁰ One can only wonder if much has changed on this point. Proportional parallelism is in any case not the instrument scholarship has been looking for all this time.

Notes

- ¹ Ruth Tatlow, *Bach and the Riddle of the Number Alphabet* (revised commercial edition of Tatlow's doctoral thesis), p. 1. 'Several bizarre examples appear in a book written in 1985 by Kees van Houten and Marinus Kasbergen.'
- ² Ruth Tatlow, *Collections, bars and numbers*, p. 58. 'I hope that the small sample of results and sources given in this paper will nevertheless be sufficient to generate valuable discussion until *Bach's Numbers Explained* (in preparation) is published.'
- ³ Ruth Tatlow, *Bach's Parallel Proportions and the Qualities of the Authentic Bachian Collection*, p. 153. 'Full coverage of the theory will be published in the forthcoming monograph *Bach's Numbers? A Riddle Unravelled*.'
- ⁴ 'Number hunters aspiring to find the chalice or holy grail in Bach's compositions.'
- ⁵ Pieter Bakker, *Proportionen*, p. 11. 'Wenn Tatlow tatsächlich aus historischer Forschung musiktheoretischer, musikkritischer und biographischer Quellen zu diesem Ergebnis gelangt ist, kann nur von einem bemerkenswerter Fall von Serendipität die Rede sein.'
- ⁶ Johann Mattheson, *Grundlage einer Ehren-Pforte*, p. 231. 'Dieser [Bach] hat ihm [Mizler] gewiß und wahrhaftig eben so wenig die vermeinten mathematischen Compositions-Gründe beigebracht, als der nächstgenannte [Mattheson].' He is commenting on Mizler, who however wrote solely about the mathematical approach to intervals and chords. See Lorenz Christop Mizler, *Dissertatio*.
- ⁷ Lorenz Mizler, *Musicalische Bibliothek*, vol. IV, p. 158-176. 'Bach ließ sich zwar nicht in tiefe theoretische Betrachtungen der Musik ein, war aber desto stärker in der Ausübung.'
- ⁸ Rolf Dammann, *Zur Musiklehre des Andreas Werckmeister*, p. 236. 'Aus der Kenntnis der *Würckungen* der Proportional-Zahlen in der Harmonia und in der rhythmisch-mensuralen Verlaufsgestalt der Musik wird es einleuchtend, daß dem Komponisten die Zahlen auch über diesen engeren Rahmen hinaus für den architektonischen Aufbau der Musik wichtig werden.'
- ⁹ Johann Heinrich Buttstett, *Ut, mi, sol, re, fa, la*, p. 175. 'Vorige angeführte Rationes mögen genung seyn zu behaupten daß wir die Soni, so hier in der Welt gebräuchlich sind u. welche Guido Aretinus mit ut, re, mi, fa, sol, la benahmset hat, dereinst bey der Himmlischen Harmonie und Music auch gebrauchen werden: Die Melodie aber wird Gott componiren.' Heinz von Loesch, *Der Werkbegriff in der protestantische Musiktheorie des 16. und 17. Jahrhunderts*, p. 114. 'Wie wir gesehen haben, gesteht Johann Mattheson (1713) "Dauer" ausschließlich den Werken der Musiktheorie und

der himmlischen Musik zu, nicht aber kompositorischen Werken.’

¹⁰ Johann Mattheson, *Der vollkommene Capellmeister*, p. 240. Before it says once again ‘mit einer gewissen Absicht’.

¹¹ Johann Mattheson, *Der vollkommene Capellmeister*, p. 156. ‘Zwar darff niemand eben so scharff hierin verfahren, daß er Circkel und Maaß-Stab dabey zur Hand nähme.’

¹² Thomas Fritsch, *Teutsch-Englisches Lexicon*, p. 2054. ‘Die übereinstimmung zweyer music-noten, the unison of two notes in musick.’

¹³ Andreas Werckmeister, *Musicae mathematicae hodegus curiosus*, p. 69. ‘Durch ein Gleichnuß können wir wohl sagen, wie unsere Natur und alles nach der aequalität strebet, also hat GOtt ein Fürbild gezeiget, daß wir ja alle nach ihm, dem einigen Gotte, streben und uns an selben belustigen sollen, der da bestehet aus einer Volkommenen Triade oder Drey-Einigkeit.’

¹⁴ Johann Mattheson, *Das Beschützte Orchestre*, p. 480. ‘So ist doch andern theils sündlich und lästerlich, die selbständige Allmacht aus Eigensinn dergestalt einzuschränken und gleichsam zu binden, als wenn sie just nach den sechs Sylben des geschornen Mönchen ihre Composition einrichten werde und müsse.’

¹⁵ Johann Heinrich Buttstett, *Der wieder das beschützte Orchestre ergangenen Oeffentliche Erklärung*. ‘Dixi & consitendo salvavi animam meam.’

¹⁶ Peter Williams, *Bach. The Goldberg Variations*, p. 3. ‘Other translations for the phrase “soul’s delight” can, like this one, easily miss the pious connotations it had for the orthodox Lutheran believer. [...] Much more than an empty formula, the phrase suggests that any such volume of music was not to be taken as the vainglorious product of some showy performer but was, indeed, a pious offering.’

¹⁷ Johann Mattheson, *Der vollkommene Capellmeister*, p. 141. The eight rules for a flowing melody that Mattheson mentions, are not about the *numerus musicus*, as Tatlow maintains. The *numerus musicus* is mentioned in one of the rules. Johann Mattheson, in: Friederich Erhard Niedt, *Musicalischer Handleitung*, deel II, p. 31. ‘Die Noten haben einen ganz andern accent im 6/4 als im 4/4; und wenn auch ihre äusserliche Figur, sammt der Geltung, mit einander in beyden überein kämen, so ist doch den valor intrinsecus ganz was anders: Der numerus musicus, die proportiones partium können eher durch ein verständiges Ohr, als durch die besten Lux-Augen, bemercket werden.’ Johann Gottfried Walther, *Lexicon*, p. 446. ‘Eine Melodie, wie aus dem Vergilio, Eclog. 9. v. 45. erhellet, woselbst folgende Worte stehen: numeros memini, si verba tenerem.’ Johann Heinrich Zedler, *Universal-Lexicon*, p. 1648. Heinrich Bokemeyer, in: Johann Mattheson, *Critica Musica*, deel II, p. 310. He writes about textual treatment and metrical feet. Daniel Georg Morhof, *Unterricht von der Teutschen Sprache und Poesie*, p. 496. Here there is talk about metrical feet and in

connection with that about the differences between languages. Zedler gives as description in his *Universal-Lexicon*, p. 1010: ‘Poeticus numerus, ist entweder der Reim (Rhythmus) da die letzten Sylben einander gleichlautend sind; oder das metrum, da gewisse pedes an ihre gewissen Oerter neben einander gestellt werden.’ He is referring to Morhof.

¹⁸ Johann Gottfried Walther, *Praecepta der Musicalischen Composition*, p. 55-72. ‘Der *Tact* soll von der Beweg- und Klopffung des menschlichen Hertzens syn erfunden werden.’

¹⁹ Johann Mattheson, *Der vollkommene Capellmeister*, p. 141. See the difference between ‘Anzahl’ and ‘Zahl’ in connection with the *numerus poeticus*.

²⁰ Johann Mattheson, *Der vollkommene Capellmeister*, Vorrede p. 16. ‘Die Mathesis ist ja in den meisten Wissenschaften, absonderlich bey ihrer Oberherrin, der Naturkunde, eine fleißige, arbeitsame Gehülffin, und nutzliche, unverdrossene vornehme Bedientinn.’

²¹ See Jacob Grimm and Wilhelm Grimm, *Deutsches Wörterbuch*, deel 25, p. 515. ‘Verhältnis, n. und f. neues wort, in den wörterbüchern vor Adelung nicht verzeichnet; abgesehen von dem unten aufgeführten vereinzelt alten belege, wol erst im 18. jahrh. nachzuweisen.’

²² Johann Georg Sulzer, *Allgemeine Theorie der schöne Künste*, vol. II, p. 1214. ‘Verhältniß. (Schöne Künste.) Die Größe oder Stärke eines Theils in so fern man ihn mit dem Ganzen, zu dem er gehört, vergleicht.’

²³ Johann Gottfried Walther, *Lexicon*, p. 177. ‘Composition (gall.) Compositio (lat.) scribendae Musicae Regulae, oder die Wissenschaft, Con- und Dissonanzen also zusammen zu setzen, und mit einander zu vereinigen, daß sie eine Harmonie geben.’

²⁴ Johann Mattheson, in: Friederich Erhard Niedt, *Musicalischer Handleitung*, vol. II, p. 145-147. ‘Unerinnert kan ich doch bey diesem Sarabanden-Schatz nicht lassen, daß die *Progressio Arithmetica* darinn etwas weniges unrichtig ist. Die Zahl der Tacte wollen es nicht alleine tun, es muß zu rechter Zeit *cadenzirt* und *clausulirt* werden; sonst hincket alles.’

²⁵ Johann Mattheson, *Der vollkomene Capellmeister*, p. 240. ‘Von dem welberühmten Steffani habe mir ehmahls sagen lassen, daß derselbe, ehe er noch eine Feder angesetzt, die Oper, oder das vorhabende Werck, wie es von dem Poeten abgefasst worden, eine Zeitlang beständig bey sich getragen, und gleichsam eine recht-ausführliche Abrede mit sich selbst genommen habe, wie und welcher Gestalt die gantze Sache am füglichsten eingerichtet werden mögte.’

²⁶ Walter Blankenburg, *Der Harmonie-Begriff in der lutherisch-barocken Musikanschauung*, p. 47. ‘Kein zweiter Begriff erschließt das Wesen lutherisch-barocker

Musikanschauung so gut wie der der Harmonie.’

²⁷ D.A. Steffani, *Send-Schreiben*, translation and commentary by Andreas Werckmeister, p. 50. ‘Wie die klingende Harmonie in unsere Ohren fällt [...], also fällt die Harmonie des Gestirnes in unser Gemüthe, regieret und treibet dasselbe.’

²⁸ Johann Mattheson, *Das Beschützte Orchestre*, p. 40. ‘Es ist ein gewisses Zeichen, daß der Solmisator das Original niemahls gesehen, oder nicht einmahl in Werckmeisters Vorrede gegucktet, da folgendes Avertissement befindlich: “Ich habe im Contextu des Herren Authoris nichts verändert; Allein wegen der Einfältigen habe ich an etlichen Orten meine einfältige Meinung hinzugethan, welche absonderlich mit grossen Buchstaben (kleinen soll es heissen) gedruckt ist, daß also ein jedes kan unterschieden werden.”’ Agostino Steffani, *Sendschreiben*, Vorrede. ‘[...] meine einfältige Meinung hinzugethan, welche absonderlich mit kleinen Buchstaben gedrucket ist,’ Werckmeister writes erroneously. Mattheson turns it around again, but he has evidently noticed who has written what.

²⁹ Rolf Dammann, *Zur Musiklehre des Andreas Werckmeister*, p. 225. Agostino Steffani, *Sendschreiben*, p. 60. Between the main text and the commentary there is a clear difference as far as content is concerned.

³⁰ Heinz von Loesch, *Der Werkbegriff in der protestantische Musiktheorie des 16. und 17. Jahrhunderts. Ein Mißverständnis*, p. 117. ‘Nach allgemeiner Überzeugung fand der musikalische Werkbegriff, wie wir ihn verstehen, seine eigentliche Ausprägung erst im 19. Jahrhundert.’

³¹ Johann Mattheson, *Das Beschützte Orchestre*, p. 480. ‘So ist doch andern theils sündlich und lästerlich, die selbständige Allmacht aus Eigensinn dergestalt einzuschränken.’ See note 12.

³² Johann Heinrich Buttstett, *Ut, mi, sol, re, fa, la*, p. 176. ‘Im Himmel hingegen wird (ob es gleich mit denen Sonis geschiehet, so wir hier haben:) in gradu excellensissimo musiciret werden und diese Excellenz hat noch nie kein Ohre gehört, kan auch mit unserer Music, welche gegen jener nur Schlacken-Werck ist, gar nicht verglichen werden.’

³³ Janis B. Stockigt, *The Court of Saxony-Dresden*, p. 33. “Den Vor[ge]schmack schon empfindt von jener Himmels-Lust.”

³⁴ Gioseffo Zarlino, *Le istitutioni harmoniche*, p. 25. ‘Della Proprietà del numero Senario, & delle sue parti; & come in esse si ritroua ogni consonanza musicale.’

³⁵ Andreas Werckmeister, *Der Edlen Music-Kunst Würde, Gebrauch und Mißbrauch*, Vorrede. ‘Wie Coelius lib. 5. cap. 22 antiq. lect. aus dem Cassiodoro ad Boëtium anführet.’

³⁶ See Pieter Bakker, *Andreas Werckmeister: the Historical Positioning of his*

Writings, p. 7. ‘In his books he mentions fourteen classical, fifteen late-classical and early Christian and twelve medieval writers, twenty-nine writers from the first part of the 17th century and nineteen contemporary ones.’

³⁷ Jacob Adlung, *Anleitung zu der musikalischen Gelahrtheit*, p. 163. ‘Guido wird daher von einigen vor den Erfinder der vollstimmigen Musik gehalten. Von andern wird Dunstan oder Dunstaph, ein Engländer, vor den ersten Componisten mit unterschiedlichen Stimmen gehalten. Sie Printzens Historie. [...] Er [Dunstaph] starb 988. Also kann Guido desto weniger der Erfinder seyn, so nachher gestorben 1028.’ Dunstan (909–988) was the archbishop of Canterbury. See also Wolfgang Caspar Printz, *Historische Beschreibung der Edelen Sing- und Kling-Kunst*, p. 104.

³⁸ Andreas Werckmeister, *Musikalische Paradoxal-Discourse*, p. 45, 79. ‘Was dieses in der Music vor die Lernenden eine Tortur, und Labyrinth gewesen, haben schon vor 100. Jahren viel vornehme und wohlgelehrte Musici beklaget.’ ‘Es ist doch von der Zeit die Solmisation, nehmlich das ut, re, mi, etc. wegen eingerißener starcken Gewohnheit, noch eine zeitlang im Gebrauch blieben, biß etwa zu Ausgang des 15. Seculi.’

³⁹ Johann Mattheson, *Das Beschützte Orchestre*, p. 262. ‘Nun gestehe ich zwar gerne, daß ich die Solmisation verhasst genennet habe, auch noch und in alle Ewigkeit so nennen will, und daß ich dieselbige Brodlose-Kunst nicht so verstehe, als ob ich mein Tage darnach singen oder dociren wolte.’

⁴⁰ Thomas Christensen, *Rameau and Musical Thought in the Enlightenment*, p. 88. “‘Indeed, God Himself is unity – a beginning without beginning or end.’” Elsewhere he wrote: “‘Just as unity is compared to the one God, so is a harmony originating in this unity and that contains in itself at once all the consonances in harmony perfectly and complete.’” Andreas Werckmeister, *Musicae mathematicae hodegus curiosus*, p. 142. *Paradoxal-Discourse*, p. 99.

⁴¹ *Bach-Dokumente*, vol. I, nr. 1. ‘[...] und sonst nach meinem geringen vermögen der fast auf allen Dorfschafften anwachsende kirchen *music*, und oft beßer, als allhier *fasonierten harmonie* möglichst aufgeholffen hätte [...].’

⁴² Ruth Tatlow, *Bach and the Riddle of the Number Alphabet*, p. 128. ‘No longer should analysts of Bach’s music quote Smend’s work as a reliable source.’ See Friedrich Smend, *J.S. Bach bei seinem Namen gerufen*, p. 27.

⁴³ Ruth Tatlow, *Text, the Number Alphabet and Numerical Ordering in Bach’s Church Cantatas*, p. 127. ‘Category One: In which the numerical value of the text is identical to the total number of bars in the cantata.’ It is not clear which part of the cantata text has to be used.

⁴⁴ Don O. Franklin, *Composing in time. Bach’s temporal design for the Goldberg*

Variations. Ulrich Siegele, Taktzahlen als Ordnungsfaktor in Suiten- und Sonatensammlungen von J.S. Bach.

⁴⁵ Pieter Bakker, *Modern Numbers: Source References in the Numerical Research of Bach's Musical Structures*, p. 18. 'In all the arts in the 1920s, spirituality, a Neoplatonic belief in an objective world of ideas, often expressed in esoteric or theosophical terms, played an important role.'

⁴⁶ Ruth Tatlow, *Recapturing the complexity of historical music theories or: What Werckmeister's doctrine and Mattheson's invective can tell us about Bach's compositional motivation*. 'This paper will use Bach's numerical structures, Werckmeister's definitions and some statements by the progressive thinker Mattheson to illustrate the benefits of a holistic approach toward music treatises. It will raise questions about the value and potential of recapturing the full complexity of historical music theories, with all that this could/not mean for the future "study of the structure of music"'.⁴⁷

⁴⁷ Ruth Tatlow, *Collections, bars and numbers*, p. 42. 'Since we also know from the Dresden parts that Bach made the copies for this movement [Quoniam van h-moll-Messe], it shows that the numbers were either a composing aid or a copying aid; that is, if it was he who wrote the bar numbers on pages 72 and 73.'

⁴⁸ J.H. van den Berg, *Metabletica*. 'De hysterie is er steeds geweest. Het is echter wel de vraag, of de hysterie te allen tijde een stoornis was [Hysteria has always existed. The question is whether hysteria has always been regarded as a disorder].'

⁴⁹ Hans-Joachim Schulze, *Bach at the turn of the twenty-first century*, p. 248. 'As a result, an image of Bach has arisen that portrays the Thomascantor as a kind of hybrid of Leonardo, Newton, Leibniz, Goethe, Einstein, and some others, or even has him surpassing these.'

⁵⁰ Wolfgang Graeser, *Bachs 'Kunst der Fuge'*, p. 12. 'Es ist ein beinahe aussichtsloses oder zum mindesten vermessenes Unterfangen, mit den Mitteln unserer heutigen Musikwissenschaft an ein so enorm schwieriges Werk, wie die Kunst der Fuge, von der formalen Seite heranzutreten. [...] Wenn es hoch kommt, können wir eine leidliche Beschreibung eines vorgelegten musikalischen Vorganges anfertigen, aber niemals eine Erklärung mit anderen als den genannten mehr oder weniger vagen Vorstellungen geben. Wenn ich nun auf einige Zusammenhänge aufmerksam mache, so geschieht es nicht, um Probleme zu lösen, sondern um solche aufzurollen.'

Bibliography

- Pieter Bakker, 'De bronnen van Andreas Werckmeister', in: *Tijdschrift voor Muziektheorie*, Amsterdam 1997.
- Pieter Bakker, *Proportionen. Ein Fall von Serendipität in der Musikforschung*, Schraard 2014.
- Pieter Bakker, *Modern Numbers. Source References in the Numerical Research of Bach's Musical Structures*, Schraard 2015.
- Pieter Bakker, *Andreas Werckmeister. The Historical Positioning of his Writings*, Schraard 2015.
- Jan Hendrik van den Berg, *Metabletica*, Nijkerk 26/1974.
- Walter Blankenburg, 'Der Harmonie-Begriff in der lutherisch-barocken Musikan-schauung', in: *Archiv für Musikwissenschaft*, Trossingen 1959.
- Walter Blankenburg, *Einführung in Bachs h-moll-Messe*, Kassel 1974.
- Johann Heinrich Buttstett, *Ut, mi, sol, re, fa, la*, Erfurt 1715.
- Johann Heinrich Buttstett, *Der wieder das beschützte Orchestre ergangenen Oeffentlichen Erklärung zweyte Auflage*, Erfurt 1718.
- Thomas Christensen, *Rameau and Musical Thought in the Enlightenment*, Cambridge 1993.
- Rolf Dammann, *Der Musikbegriff im deutschen Barock*, Laaber 3/1995.
- Rolf Dammann, *Zur Musiklehre des Andreas Werckmeister*, in: *Archiv für Musik-wissenschaft*, Trossingen 1954.
- Johann Nikolaus Forkel, *Über Johann Sebastian Bachs Leben, Kunst und Kunstwerke*, Leipzig 1802.
- Don O. Franklin, *Composing in time. Bach's temporal design for the Goldberg Variations*, in: *Irish Musical Studies, Bach Studies from Dublin*, Dublin 2004.
- Thomas Fritsch (ed.), *Teutsch-Englisches Lexicon*, Leipzig 1716.
- Wolfgang Graeser, 'Bachs "Kunst der Fuge"', in: *Bach-Jahrbuch 1924*, Leipzig 1924.
- Jacob Grimm en Wilhelm Grimm, *Deutsches Wörterbuch*, Leipzig 1854–1961.
- Kees van Houten en Marinus Kasbergen, *Bach en het getal*, Zutphen 3/1992.
- Thijs Kramer, *Zahlenfiguren im Werk Johann Sebastian Bachs*, Hilversum 2000.
- Heinz von Loesch, *Der Werkbegriff in der protestantische Musiktheorie des 16. und 17. Jahrhunderts. Ein Mißverständnis*, Hildesheim 2001.
- Johann Mattheson, *Critica Musica*, deel II, Hamburg 1725.
- Johann Mattheson, *Der vollkommene Capellmeister*, Hamburg 1739.
- Johann Mattheson, *Das Beschützte Orchestre*, Hamburg 1717.

Johann Mattheson, *Das Neu-Eröffnete Orchestre*, Hamburg 1713.

Johann Mattheson, *Grundlage einer Ehren-Pforte*, Hamburg 1740.

Johann Mattheson, *Behauptung der Himmlischen Music*, Hamburg 1747.

Lorenz Christoph Mizler, *Musikalische Bibliothek*, vol. IV, Leipzig 1754.

Lorenz Christop Mizler, *Dissertatio*, Leipzig en Wittenberg, 2/1736.

Daniel Georg Morhof, *Unterricht von der Teutschen Sprache und Poesie*, Lübeck en Frankfurt 1700.

Werner Neumann en Hans-Joachim Schulze, *Bach-Dokumente*, vol. I, Leipzig 1963.

Friederich Erhard Niedt, *Musicalischer Handleitung*, vol. II, Hamburg 2/1721.

Wolfgang Caspar Printz, *Historische Beschreibung der Edelen Sing- und Kling-Kunst*, Dresden 1690.

Hans-Joachim Schulze, *Bach at the turn of the twenty-first century*, in: *Irish Musical Studies, Bach Studies from Dublin*, Dublin 2004.

Ulrich Siegele, *Taktzahlen als Ordnungsfaktor in Suiten- und Sonatensammlungen von J.S. Bach*, in: *Archiv für Musikwissenschaft*, vol. 63, nr. 3, Trossingen 2006.

Friedrich Smend, *J.S. Bach bei seinem Namen gerufen*, Kassel en Basel 1950.

Agostino Steffani, *Send-Schreiben*, transl. Andreas Werckmeister, Quedlinburg en Aschersleben 1699.

Janis B. Stockigt, *The Court of Saxony-Dresden*, in: *Music at German Courts. 1715–1760*, Woodbridge 2011.

Johann Georg Sulzer, *Allgemeine Theorie der schöne Künste*, vol. I and II, Leipzig 2/1792, 2/1774.

Ruth Tatlow, *Bach's Numbers. Compositional Proportion and Significance*, Cambridge 2015.

Ruth Tatlow, *Text, the Number Alphabet and Numerical Ordering in Bach's Church Cantatas*, in: *Bericht über das 3. Dortmunder Bach-Symposion 2000*, Dortmund 2002.

Ruth Tatlow, *Bach and the Riddle of the Number Alphabet*, Cambridge 1991/2006.

Ruth Tatlow, *Collections, bars and numbers. Analytical coincidence or Bach's design?* in: *Understanding Bach, Bach Network UK* 2007.

Ruth Tatlow, *Bach's Parallel Proportions and the Qualities of the Authentic Bachian Collection*, in: *Dortmunder Bach-Forschungen*, Dortmund 2009.

Johann Gottfried Walther, *Praecepta der Musicalischen Composition*, ed. Peter Benary, Weimar 1708, Leipzig 1955.

Johann Gottfried Walther, *Musicalisches Lexicon oder Musicalische Bibliothec*, Leipzig 1732.

Andreas Werckmeister, *Musicalische Paradoxal-Discourse*, Quedlinburg 1707.

Andreas Werckmeister, *Musicae mathematicae hodegus curiosus*, Frankfurt en Leipzig 1687.

Wilhelm Werker, *Studien über die Symmetrie im Bau der Fugen und die motivische Zusammengehörigkeit der Präludien und Fugen des 'Wohltemperierten Klaviers' von Johann Sebastian Bach*, Leipzig 1922.

Peter Williams, *Bach. The Goldberg Variations*, Cambridge 2001.

Gioseffo Zarlino, *Le istitutioni harmoniche*, Venetië 1562.

Johann Heinrich Zedler, *Grosses vollständiges Universal-Lexicon aller Wissenschaften und Künste*, Halle en Leipzig 1731–1754.

Pieter Bakker is editor-in-chief of the magazine Kunst en Wetenschap.