

# Harpsichord & *fortepiano*

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# KEYBOARD TEMPERAMENT IN THE NINETEENTH CENTURY: THE WELL TEMPERED ROMANTIC

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By Daniel Grimwood

## Introduction

Temperament is a science, an art form and a necessary compromise. If all twelve tones of the western scale are tuned acoustically pure, they overstretch the octave, so to “correct” Mother Nature, some or all of the intervals need to be slightly narrowed in order that they fit within the parameters of the pure octave. There are endless solutions to the problem, each having its merits and its cost. Equal temperament narrows all of the fifths in the scale to exactly the same minute degree, the profit being that all the key areas are equally useable; the cost, that all of the major thirds are very wide and all the minor thirds very narrow. In the modern age we have come to accept equal temperament as the perfect solution, but is it? Unequal tunings (and there are an unbelievable range of such temperaments), where there are differing widths of fifth, have the merit of at least some harmonious thirds, offering areas of tonality which sound ravishingly pure; the price, a heavy one, is that the remaining tonal areas are rather more out of tune. But, what if composers adapted to this state of affairs and turned cost into profit?

The fascinating world of keyboard temperament is well known amongst harpsichordists, organists and most baroque specialists, but remains largely unknown to pianists and modern instrumentalists. It is a subject which is, I believe, of crucial importance to our understanding of music from the nineteenth century as well, which will inform musicians and listeners alike as to why composers chose particular keys for particular works and which will bring greater clarity and sympathy to interpretations of solo piano and chamber music from this period.

My interest in temperament began when the excellent harpsichordist, pianist and conductor, Gary Cooper offered to loan me his harpsichord. Clearly I had to learn how to tune the thing, but initial experiments taught me that this is far

from a simple matter! In a state of desperation I decided to see what I could glean from the Internet, and an esoteric world of bewildering variety, vicious debate and seemingly endless mathematical equations unfolded before me.

I found frequent references to a book by Ross W. Duffin, entitled *Why Equal Temperament Ruined Harmony – and why you should care* and resolved to buy a copy. The book, which is written in an informal style and is intended to stimulate the interest of performing artists like myself, inspired me to learn as much as possible about temperament and the harmonic language it enshrines – and which, through the tumultuous course of the twentieth century, has been unlearned. I’ve subsequently enjoyed an interesting and lively correspondence with Mr. Duffin, who’s book I emphatically recommend to all performing musicians and anyone who wants to learn about tuning systems through music history.

When one has been raised with equal temperament as I have, alternative solutions are, at first, difficult to digest; but with experience and a very little education, one comes to realise that there are very sound reasons why so many generations of musicians resisted “equal dissonance”. And equally sound reasons why the twentieth century embraced it.

To illustrate the case, have a violinist tune the F below open A pure, and then play the same interval on an equally tempered piano. The major third on the piano does pinch rather by comparison. However, I have no hatred for equal temperament (it would be fatuous to perform a Prokofiev sonata on a piano tuned to Vallotti, for instance!) and any music can sound great when well played using it. But I do think that there is much to be learnt from experimenting with older alternatives and, from my own recent experience, the music of Schumann, Schubert or Liszt *et al* is illuminated in quite refreshing and surprising ways. Moreover, as any string player or singer who has worked with other

alternatives will tell you, equal temperament is exceedingly difficult to play in tune with.

The purpose of this article is to elucidate my observations about performing music of the romantic era using unequal temperaments, and to share one or two striking examples which illustrate why the time has come to at least consider alternative tunings.

## Why is Chopin's Funeral March Sonata in Bb Minor?

Bb Minor:

A quaint creature, often dressed  
in the garment of night.

It is somewhat surly and very seldom  
takes on a pleasant countenance.

Mocking God and the world;  
discontented with itself and with everything  
preparation for suicide sounds in this key

—Christian Schubart, *Ideen zu  
einer Aesthetik der Tonkunst*<sup>1</sup>

I'm recalling a piano lesson on Chopin's 2nd Sonata when I was younger and prettier: my teacher was trying to inspire me to play with more anguish and vehemence – I was a very happy teenager, so this didn't come naturally to me – and started talking to me about Bb Minor being a very "dark, morbid" key. This is, of course, utter nonsense in the context of equal temperament (though, of course the point was highly relevant, as we shall see), as each key is equally out of tune in relation to the next.

Sitting in my living room at the moment is an exquisite copy of an 1823 Brodmann fortepiano by David Winston, kindly loaned to me by Steven Coles and the Tudeley Festival, which I have just tuned using the Bach-Lehman model (which, I believe is close to many early 19<sup>th</sup>-century systems). Having just played the first couple of pages of Chopin's sonata to myself, I can hear that Bb Minor is indeed a 'dark, morbid key' – the instrument positively shrieks with agony, as the first chord (C# Minor), with its rather wide E - G sharp, 'resolves' to Bb Minor with a very narrow minor third. The second subject (as in the Trio to the Funeral March) is in Db Major and offers no respite as this also has an uncomfortably wide major, and narrow minor third.

It makes uncomfortable listening to modern ears. One wonders whether contemporary listeners were accustomed to unequal temperament, and whether it affected their understanding of music. If a similar tuning were

indeed used, it would explain - if not justify - Schumann's oft quoted critique of this work.<sup>2</sup>

With equal temperament, the music sounds more placid, more bland... and less shocking.

I'm convinced that Chopin's choice of Bb Minor wasn't arbitrary. It is a key he used extremely rarely (2<sup>nd</sup> Scherzo, 17<sup>th</sup> Prelude, a Nocturne and an early Polonaise - nothing else springs to mind offhand), and to create an effect of grotesquery. Whether or not this is related to temperament remains a matter of – at times violent – debate! Anyone interested ought to take into consideration the groundbreaking research of Jonathan Bellman at the University of Northern Colorado.

There are of course many other pertinent examples (the somnambulist C# Minor Prelude Op. 45, which skims delicately over the surface of every key, for instance) which could indicate Chopin's preference for either equal or well-temperament – depending on your viewpoint!

## Schubert and Liszt

No composer of the early nineteenth century is more adventurous, harmonically, than Schubert. He used an unrivalled variety of tonalities, modulated with astonishing rapidity to distant keys and, to paraphrase Alan Walker in his excellent biography of Liszt, "plagiarised from the future" shamelessly! In all of these things he reveals himself as Liszt's musical kin, and the influence he wielded upon this Hercules of the piano cannot be underestimated. Thus, if we view Liszt as the torchbearer guiding the path to modernity, we must also view Schubert as the Prometheus who stole the fire in the first place. Both composers remain my bigamous first loves.

In the debate, which currently rages about precisely how early pianos were expected to be tuned, many experts will readily accept that well-temperament is entirely appropriate in Schubert. Far fewer will believe it possible that Liszt's music can be successfully supported by the same treatment. I tend to disagree.

If we accept the likelihood that pianos of the early nineteenth century would have been tuned to some kind of well-temperament, we must also concede that Schubert relished the colours this tuning creates in exotic keys. It is generally agreed that, when the Impromptu in Gb was transposed to Gb for publication, it was to make life easier for the pianist. Speaking as a pianist, I must say that anyone who can play it in G can also play it in Gb, without too



much trauma. (I've just tried the transposed version and actually find the original easier!)

Wouldn't it be just as likely that the publishers balked at how this music sounded in Gb Major in unequal temperament and considered it too radical? After all, the middle section in Eb Minor (to quote Schubert again "...if ghosts could speak, their speech would approximate this key") sounds very bleak indeed in well-temperament.

There is the interesting case of the Eb Sonata D568, whose first version is in Db (the only other major difference between the two versions is the key of the central movement; the tonic minor in the first version and the relative minor in the second). If any sensitive pianist plays the opening bars of both versions on a well-tempered piano, they will find themselves playing with totally different tempi and nuances. I might add that both versions sound splendid, and that the difference in key choice, when rendered in well-temperament, reveal each as completely distinct creations.

Liszt himself used "colourful" keys, and yet the majority view seems to be that well-temperament is inappropriate. But I think we would do well to consider when he was born: 1811. And who taught him? Beethoven's pupil, Czerny. Add to that the fact that most of his concert activity took place in his earlier years. He seems to have very clear key associations in his work; Ab Major - romance and loveliness ("*Liebestraume*" 1 and 3, "*Au borde d'une source*", "*Au lac de Wallenstadt*"); D Minor - Sturm und Drang, sulphur ("*Dante Sonata*", "*Totentanz*", "*Czardas Macabre*"); F# Major - religious revelation, redemption ("*Benediction de la Dieu dans la Solitude*") to provide but a few examples.

Anyone familiar with his late works can affirm that he was hardly a man to be coy about ugliness in the name of expression, nor does his admiration for Gypsy music seem to indicate that he was overly concerned with whether or not music had been French polished!

Those who detract from the idea that the Romantics would have delivered their utterances on unequal keyboards put forth a persuasive argument that *Affekt* was the property of the eighteenth century, and that by the time the nineteenth century was in full swing, the residue of antiquated tuning systems had already entered to musical collective subconscious; in a nutshell, everybody knew the "*Eroica*", the "*Moonlight*", the Toccata and Fugue in D Minor backwards, so when anything was heard in one of the keys associated with the above, their emotional response would be affected accordingly.

This is, of course, an oversimplification, but the point is valid and serves to explain my aforementioned lesson on Chopin.

It seems to me, after playing lighter passages of Liszt to friends on the fortepiano (as I've yet to find a concert grand tuned to anything other than equal temperament), that some people embrace well-temperament in romantic music, and others simply cannot bear it. Perhaps that was also the case 150 years ago. Whatever the case, I can't help but imagine the child Liszt working with Carl Czerny on what would doubtless have been an unequal keyboard, and as we all know habits from childhood die hard.

## The Effect Of Temperament On Interpretation

The first time I performed romantic music on a tempered keyboard was in concert with soprano, Jessica Leschnikoff at the Tudeley Festival, where we performed a concert of music ranging from Schubert through to Wagner. Perhaps the Wagner was stretching it a bit! But I refuse to believe that by the time he composed his *Wesendonk-Lieder*, all earlier Viennese fortepianos had been cut up into firewood. Schubert in well-temperament was, for both of us, a revelation. Each modulation hit us with greater drama and force and it was far easier to understand Schubert's key progressions architecturally. Less highbrow, Jess found it easier to sing in tune. Nobody in the audience was offended by the tuning - even in the Wagner.

Schubert, in times past, was criticized for the simplicity of his sonata structures (a mistake which occurs when one views his music through Beethoven's eye-glass), and for the fact that his work was overly dependent upon melody. Fortunately this time has long since passed. I would add that his structures seem to be guided as much by key area as melody, and this is brought into sharper relief when well-temperament is used. Consider for a moment the end of the development of the first movement of D960. At bar 173, the music subsides, exhausted, into D Minor. It tries fatuously to reach the comfort of F Major at bar 184, but nonetheless remains in the minor until bar 193 where, pivoted by a growling bass trill, we are offered a glimpse of the hereafter (marked *ppp*, which in my opinion always indicates the moderator pedal in Schubert), only to be pivoted back to D Minor by another trill. This visionary passage reminds one somewhat of the pre-emptory horn triad just

before the re-cap of the first movement of the “*Eroica*”. I describe this in full as it perfectly demonstrates Schubert’s habit of using key area as a primary means of expression. To my ears, this works infinitely better with unequal tuning, and makes life easier for the performer, as no clever *rubato* or nuance is necessary – the “expressive intonation” which string players speak of does the floor work for you.

There are two basic types of *rubato*: The subtle (on a bad day unsubtle!) manipulation of melodic rhythm, often used to imitate the voice and to soften corners and airbrush out barlines, and then, what I call harmonic *rubato*, where a modulation or individual chord can be given gravity by delaying – a device which I find particularly useful in Brahms, or rendered more impetuous by anticipating – I use this in Liszt a great deal, a cue I’ve taken from Cziffra’s electrifying performances.

When seated at a well-tempered keyboard, I find myself using the latter hardly at all, and the former more than ever. When playing a melody I find it irresistible to linger on a note, which is slightly out of tune, or ‘ripe’ in relation to its predecessor, as many harpsichordists do. If I have the means at my disposal, why should I not indulge in “expressive intonation” as string players do? Conversely, as I’ve already indicated, I use harmonic *rubato* far less – the tuning does it for me.

This makes for more fluid performances – my interpretations are being tempered by temperament!

My suggestion that Liszt should be attempted in some kind of well-temperament has been met with enthusiasm in a few quarters (my colleagues, mostly: “What a fascinating idea”), amusement in others (open minded piano technicians: “God, you’re brave”), and mostly, scepticism (less open minded piano technicians: “God, you’re mad”). The sceptics cite Liszt’s chromaticism as the main reason why equal temperament is the ideal vehicle for this music. But Liszt didn’t pen “Tristan” and much of his music languishes quite contentedly in one tonality for considerable periods of time. It’s certainly true that, within a limited tonality, he would embellish with chromatics far more richly than most of his peers, but for Liszt, chromaticism seems to denote either struggle or heightened eroticism and both states are, in my view, able to bear contrasts in tuning successfully. It is well worth remembering that, before his final, visionary experiments with atonality, Liszt composed nothing – *nothing* – that cannot be explained in conventional harmonic terms (on occasion he went to great

lengths to demonstrate this fact), and that his late masterpieces were composed, not for a contemporary audience (whom he had very great reason to feel discontented with), but for himself or some imaginary future listener.

I’d like to remind the reader that Liszt the pianist (arguably the greatest in history) was constantly striving for novel effects and as great a palate of expression as possible. With unequal tuning, perhaps we can restore something of the “shock value” that many of his compositions created.

## Temperament and Composition

Both Chopin and Liszt were eastern Europeans who settled in central Europe and both were pre-occupied with their national music throughout their careers. This goes a long way to explain the unique harmonic characteristics of their works and the fact that they were prepared to journey further from conventional tonal bases than their German counterparts. Both developed a vivid and highly coloured tonal palate, which reflected their origins. This is one reason why I believe it possible that their ears could not only tolerate “interesting” sonorities, but also relish them.

Between the two of them, they were the most influential composers for the most influential instrument of the period, and the effect of their works on their German colleagues was far-reaching.

Chopin, taking inspiration from Bach, composed his preludes in all 24 keys, which suggests to me that he had knowledge of the sophisticated language of “key colours” which had reached a high degree of refinement by the beginning of the nineteenth century. I have the temerity to believe that he would have had enjoyed the individual *Affekt* of each key (as I do), and that this inspired him to explore the expressive possibilities of their individual sonorities – to make profit out of cost. In the Preludes, the dramatic and vehement contrasts of mood accurately reflect the same contrasts we hear in a well-temperament. This surely isn’t merely association.

A comparable body of work to Chopin’s Etudes is Adolf von Henselt’s 24 Etudes, which arose as a result of Chopin’s. As Richard Beattie Davis points out, his harmonic language (simpler by far, though no less sophisticated than his eastern European colleagues), like Schumann’s, seems to be rooted in German folksong. The inexplicably neglected Henselt was rather more than a peripheral figure



in 19<sup>th</sup>-century piano music, and for our purposes, left behind some very interesting programmatic subtitles to his works.

A cursory glance through my copy of the Etudes brings to mind Schubart's writings: Bb Minor – Henselt: "Swelling with sighs", "Remember'd joys", "My heart, Ah me! Beats restlessly"; Schubart: "preparation for suicide sounds in this key": F Minor – Henselt: "Entschwundenes Glück"; Schubart: "Deep depression...groans of misery"; Bb Major – Henselt: "Repos D'amour"; Schubart, "Cheerful love...".

They by no means all correspond, but this demonstrates that when Henselt penned these mini masterpieces the idea of key colours was very much alive and kicking.

The subject of key characteristics in relation to temperament has been very well researched in music of the nineteenth century, and I propose that the time has come to apply the same treatment to the nineteenth century.

A comprehensive exegesis of this fascinating subject would constitute a separate study, so I'll spill no more words here, other than to mention that I've just played through Schumann's *Blumenstücke* Op. 19 – a work in which I've always sensed "immortal longings" – in well-temperament. It does indeed sound otherworldly!

## Postlude

Through my fickle flirtation with this subject, only one thing emerges with any degree of clarity; that there are many, many questions, but very few answers.

I am looking forward to experimenting with temperament, and perhaps regaining some sounds and colours, which Romantic composers may have recognised as their own.

This remains a highly controversial and divisive area, and I am only a pianist and not a scholar. But it is well worth remembering that the baroque period instrument movement in its infancy aroused violent debate and division amongst performers, scholars and audiences alike. The discoveries of those pioneers in musical performance have long since filtered down into modern performance practise, and long may it continue.

Without performers who are willing to experiment with different methods of performance, music becomes preserved in

aspic and I hope that by un-bosoming my own limited experiences I may excite the interest of my colleagues and audiences alike.

## A Few Weeks Later

Yesterday my piano technician set up my modern piano to the "Bach-Lehman" temperament.

Contrary to what I expected, the tuning has far greater subtlety than on older instruments. A few key areas sound palpably different – Eb, Ab and Db Major, and Bb Minor. Other than that, the whole instrument vibrates more openly and sounds more fluid and immediate, even in Prokofiev. I think, given the choice, I would always play on an instrument tuned this way.

I demonstrated some passages to my parents, who are not musicians, and whilst they didn't notice any specific differences in key area, they did pick up on how the instrument sounds freer.

Various people have commented that such tuning is inappropriate on a modern instrument as it will inevitably sound sour, I would urge them to try it.

I am more convinced than ever that 19<sup>th</sup>-century pianists would have chosen unequal tunings as, put simply, it sounds better.

1 Translated by Rita Steblin from *A History of Key Characteristics in the 18th and Early 19th Centuries*, (Epping: Bowker, 1983).

2 "...from this musical line without melody and without joy, there breathes a strange, horrible spirit which annihilates with its heavy fist anything that resists it, and we listen with fascination and without protesting until the end-but without, nevertheless, being able to praise: for this is not music" —Robert Schumann