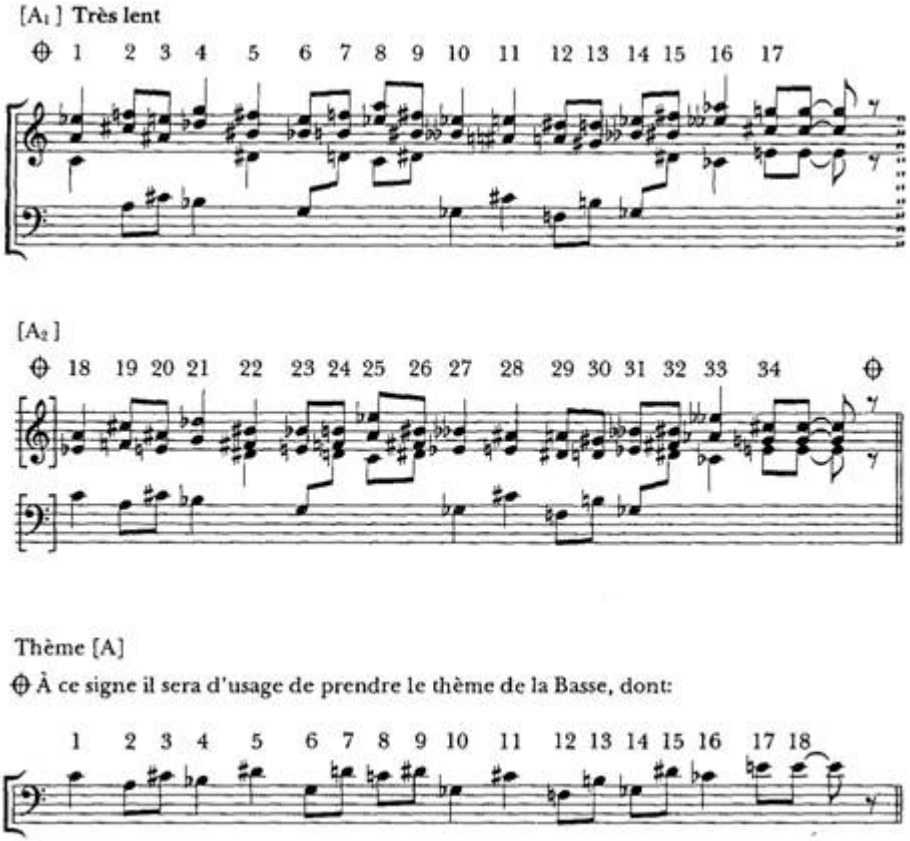
Understanding Satie's 'Vexations'

An article by Robert Orledge.

This article was originally written at the request of Ornella Volta for a dossier of articles on Vexations to be published by the Archives de la Fondation Erik Satie, Paris.

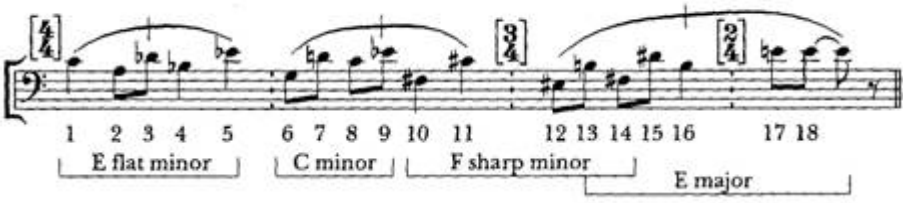
SINCE ITS first reproduction in print in 1949, the single manuscript page containing the piece by Erik Satie entitled Vexations (Ex. 1) has attained something approaching celebrity status.[1] In many ways, this remains Satie's most revolutionary work, still causing controversy over a century after it was composed in 1893. With its 840 repetitions, it is Satie's longest composition and also the supreme example of his quest in the 1890s to make much out of a little (in this case, what is in effect a single three-part diminished chord). It is also the first known experiment in organized total chromaticism and continual, unrelieved dissonance, with no obvious sense of direction or tonal centre. Indeed, if its 'theme' contained the missing A6, it might be viewed as the first experiment in serialism. It is certainly minimalist; it is the first piece to explore the effects of boredom, even of hallucination, both on the performer and on the audience, as well as being the first piece to incorporate a period of silent meditation in its performance indications. It is no wonder, then, that Vexations was the piece that most interested John Cage in his post-war rediscovery of Satie. He mounted the first complete performance of it in the Pocket Theatre, New York, on 9 September 1963; it lasted 18 hours and 40 minutes, though the link between the timing and the 840 repetitions was not fortuitous. As Ornella Volta has discovered, Cage in fact carefully divided the performance up into 56 twenty-minute slots, each containing fifteen playings of one minute and twenty seconds.[2]

Ex. 1 The score of; *Vexations*
Pour se jouer 840 fois de suite ce motif, il sera bon de se préparer au préalable, et dans le plus grand silence, par des immobilités sérieuses



It would appear that Satie deliberately made Vexations hard to grasp (or memorize) for the performer (presumably a pianist or a harmonium player, although no instrument is specified, just as no dynamics are marked). Satie's apparently abstruse enharmonic notation spells chords 13 and 33 in Ex. 1 differently, even though they are the same, and the identical right-hand parts of chords 1, 10 and 12 (or 18, 27 and 29) are all spelt differently too (the reasons for this will become apparent below). Chords 2 and 19, at the start of the chain, are augmented-fifth triads in first inversion, while the remainder are diminished triads in first inversion which could be considered as a succession of VIIb chords, of incomplete second-inversion dominant sevenths (V7c) or, more probably, of incomplete diminished sevenths, none of which, of course, is ever resolved. But with Satie, things are never quite what they seem. Even though no sketches have survived for Vexations, it is clearly a neat copy of an earlier draft, and further investigation reveals that there is a logic and indeed a highly organized compositional system behind the 'vexations' caused by Satie's weird chromaticism, even if it does not yield up its secrets at all easily.

Ex. 2 A tonal interpretation of the bass 'theme' of *Vexations*

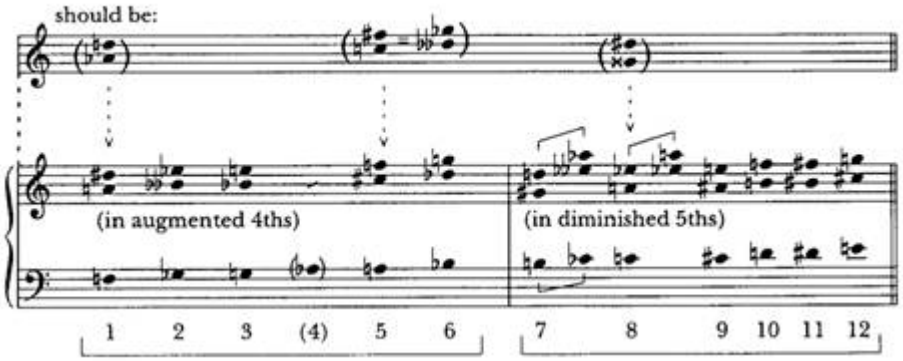


The main clues lie in the construction of the bass theme, the only element to remain constant throughout (for when the chord sequence is repeated, the upper parts are inverted, and even if the inner part of the first statement remains at the same pitch in the second, it now appears to the listener as an upper melody). The angular and apparently disjointed theme is, in fact, constructed extremely skilfully. If we change the enharmonic notation slightly, as in Ex. 2, a tonal basis is apparent, passing from E flat minor through C minor and F sharp minor to emerge in its last six notes in E major, with the first two of these notes also belonging to the previous key and thus acting as a pivot. Similarly, the first transition to C minor is carefully managed, with C and E6 as

common notes and a feeling of rhythmic sequence between beats 2-4 and 6-8. Satie may even have first notated his theme as in Ex. 2 and then changed the penultimate note to C6 to obscure its dominant relationship with the final E, for this is the only recurring note in the final version of the theme which has two different enharmonic spellings (notes 13 and 16).[3] Whatever the case, it seems that this note was of particular importance to the construction of the piece, which does indeed prove to be the case.

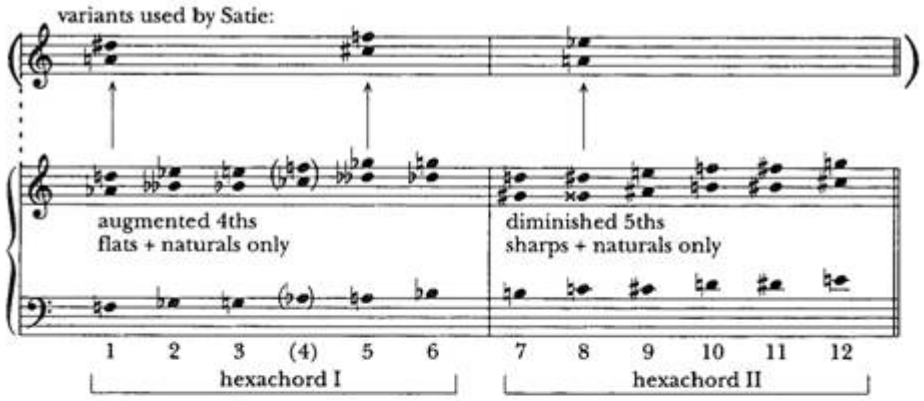
The second clue towards uncovering the compositional system behind Vexations lies in the fact that all the chromatically inflected notes below b in the bass theme are notated as flats, while all those above (except the penultimate G) are sharps. This suggests that Satie constructed his theme with a compositional system in mind rather than trying deliberately to obscure its likely tonal origins. This is confirmed by his leaving notes 5, 9 and 15 as D#'s, which form focal upper notes finally resolving on to E as if from a leading note to its tonic. This also suggests that the theme was constructed to work on two melodic levels, above and below the central b/c6'. While the upper notes appear to predominate (ten of the eighteen notes belong to this group), Satie skilfully achieves parity between the two groups by placing most of the natural rhythmic stresses within the lower one (especially notes 4, 6, 10 and 12). For despite its barless notation, Vexations divides naturally into three melodic phrases which in turn suggest a progressive reduction in `bar' length and therefore, perhaps, in metre (see the dotted bar-lines in Ex. 2; other interpretations are, of course, possible, but this seems the most natural one to me). It also contains two `key areas' in each half, with the shift from C minor to F sharp minor bisecting the theme exactly (notes 9-10), just as the note f# bisects exactly the octave from c to c. The tritone also features prominently within the F sharp minor section (notes 12-13, with 13 repeated as 16), so Satie seems to have been well aware of the potential of this interval in the construction of an atonal composition at this early stage in his career.

Ex. 3 The compositional system used in *Vexations*

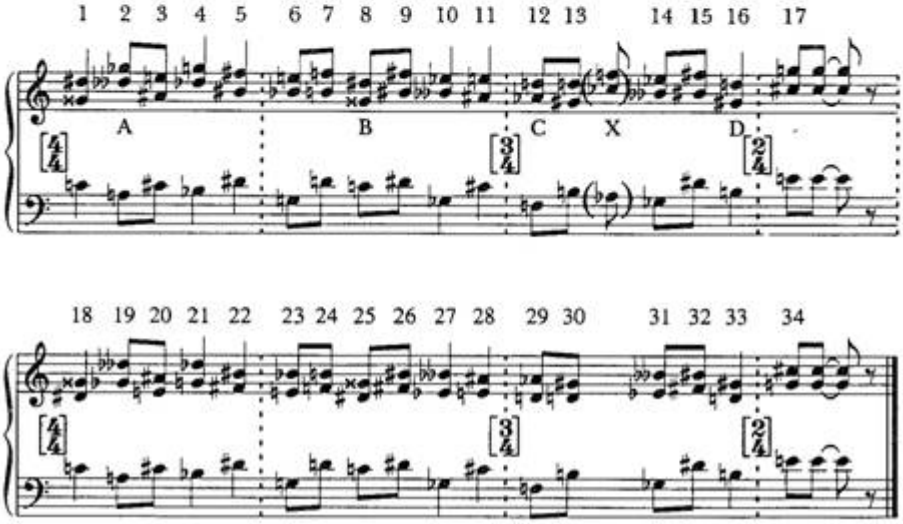


If we take b/cV as the dividing point in Satie's theme and list the chords he uses above each degree of the chromatic scale from f to e' (see Ex. 3), we can begin to construct a compositional system for Vexations. It seems that the overall plan for the first group (degrees 1-6, with 4 unused) was to notate the upper parts in flats as ascending augmented fourths (as in degrees 2-3 and 6, i.e., the majority). This, of course, matches the flats in the bass scale. Then in the second group (degrees 7-12), the same upper parts were notated in sharps as rising diminished fifths over the remainder of the bass scale, almost like a second six-note row of the kind found in Webern or late Stravinsky. I will deal with the deviations below, excepting the chord above the eighth degree, which should have been notated with Gx and D#, rather than A and E6, to be absolutely consistent. Satie probably wrote it thus to distinguish it from the deviant chord on the first degree and from the identical (correctly spelt) chord on the second. He also seems to have been anxious not to complicate his enharmonic system still further through the addition of double sharps; we will see below why he was wise to follow this course.

Ex. 4 A 'perfect' version of the *Vexations* system



Ex. 5 A 'perfect' version of *Vexations* using the compositional system shown in Ex. 4

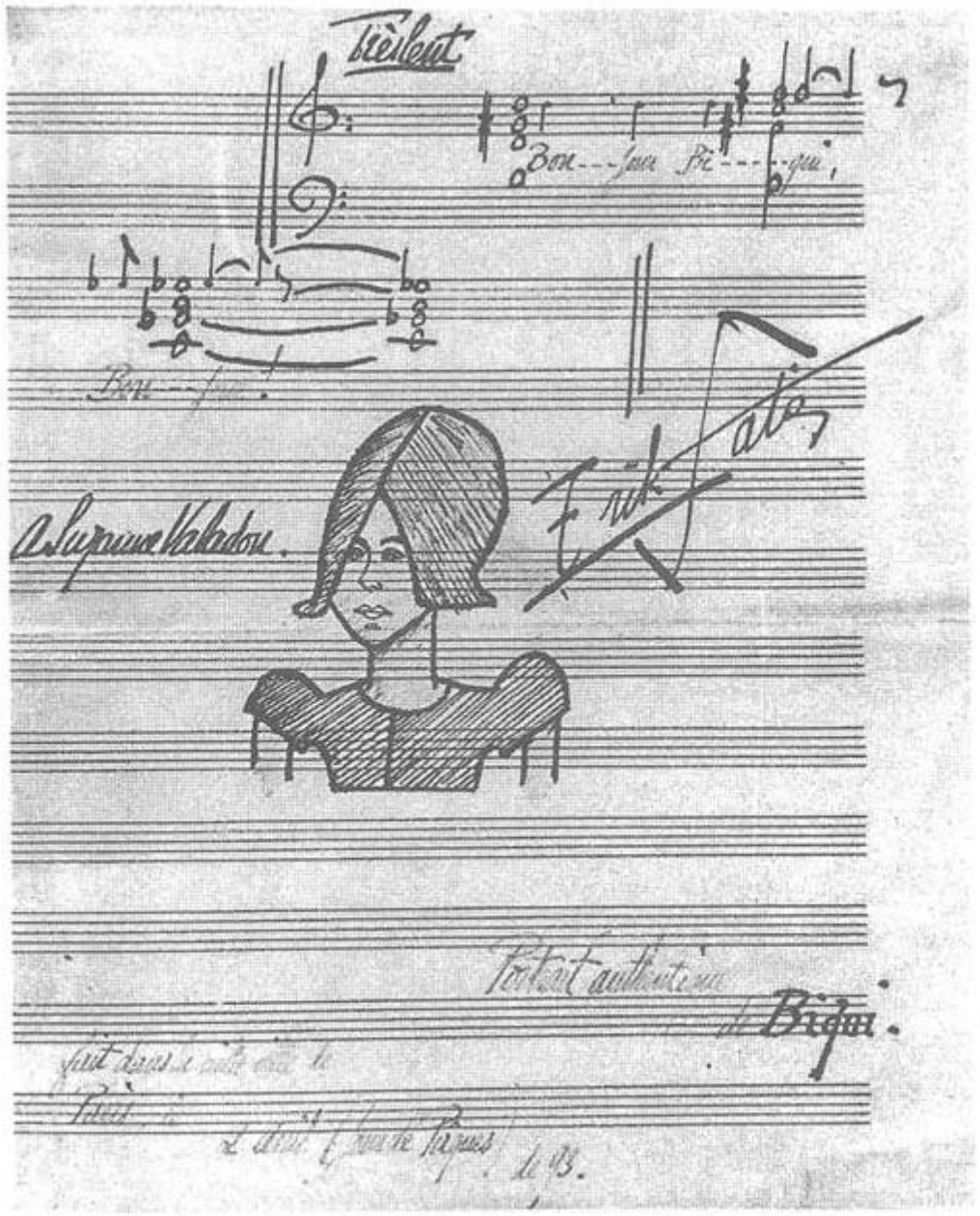


Thus we can construct a completely logical system for the composition of Vexations as in Ex. 4, even down to the chord for the missing fourth degree. Just as Vexations divides into two strains in which the upper parts are a mirror reflection of each other, so these upper parts also divide into two exactly symmetrical halves in which the same notes and intervals are variously re-notated enharmonically. It should also be noted that this is the first of Satie's compositional systems to be constructed from superimposed scales or modes; this type of chromatic system is more commonly associated with him in the period around 1917. Incidentally, if we play the `perfect' system in Ex. 4 on its own, the three notes of chord 12 resolve naturally by semitone movement on to a 6-4 chord of A flat (major), which is the missing note in the original `theme'. This strengthens the argument still further for Vexations being the first piece of totally organized chromaticism.

But as always, Satie the composer took over from Satie the logician when it came to producing his surviving final copy of Vexations. If we construct a `perfect' version of the piece based on Ex. 4 (see Ex. 5), we can see why the deviant chords or variants occur in Ex. 3 (or Ex. 1). First, the augmented-fifth chord at A was probably substituted both to inhibit the memorization of Vexations by the performer and because it gave the first phrase a better melodic shape with no pitch repetition. However, this did not seem to worry Satie in the case of chords 19 and 21, and it is likely that all his compositional effort was directed into perfecting the first chain, which was then merely inverted in the second. It is possible, of course, that Satie simply got the accidentals the wrong way round in the upper parts of chord 2, although this is less likely. Second, at B and D in Ex. 5, Satie's aim must again have been to give a better melodic shape through the higher-lying versions of chords 7 and 8 in Ex. 3. The second phrase (chords 6-11), which contains the highest note in the piece, thus acts in Ex. 1 as a logical extension of the first (chords 1-5); and chord 16 in

Ex. 1 also preserves the general guiding principle of contrary motion between the outer parts. It should be noted that this chord, at least, is correctly notated in flats to go with the C6 in the bass (in fact, all the strange chromaticism becomes perfectly logical once one understands the underlying, internally repetitive system). Finally, one can see at C why chord 12 in Ex. 5 (chord 1 in Ex. 3) had to be altered; otherwise it would have had two notes in common with the following chord (13). This would have broken the apparent overriding rule that each consecutive chord in Vexations had to sound different from its predecessor, apart from the final chord (17), which is repeated to form a temporary resting point. The only other solution would have been to modify the theme: had it occurred to Satie, he could have put his A6 here and made the theme totally chromatic (using the bracketed chord marked `X' in Ex. 5). However, this would have meant outlining a complete diminished seventh in chords 12-13, as well as using exactly the same upper parts in chords 7-9 and 13-15. My `perfect' version of the second chain in Ex. 5 shows even more clearly why Satie needed his chordal variants, especially those at B, C and D. Overall, Ex. 5 is even more awkward to play, so Satie must have given some thought to practicability, even if Vexations was certainly not conceived at the keyboard.

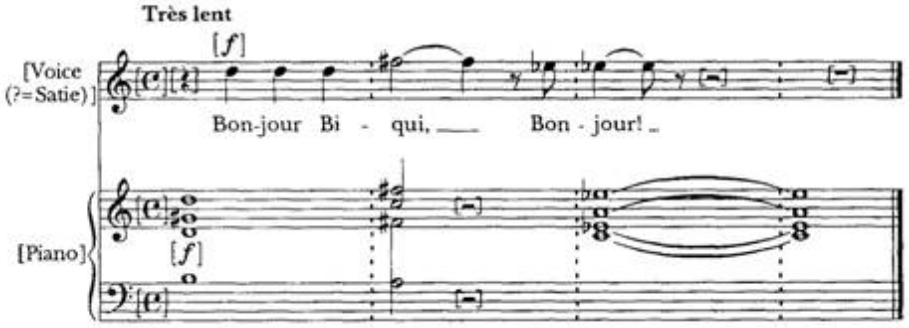
PLATE I



Satie, 'Bonjour Biqui, Bonjour!', from Pierre-Daniel Templier, *Erik Satie*, Paris, 1932, Pl. XII

From a stylistic point of view, Vexations clearly is contemporary with 'Bonjour Biqui, Bonjour!' (see Pl. I), which was composed for his lover, the artist Suzanne Valadon, as an Easter Sunday gift on 2 April 1893. Moreover, Satie used the same mixture of fullstrength and watered-down ink on both manuscripts, so there can be little doubt that the instructions for the performance of Vexations are contemporary with the music itself.

Ex. 6 'Bonjour Biqui, Bonjour!' (2 April 1893)



From my transcription in Ex. 6, it seems clear that 'Bonjour Biqui, Bonjour!' was in all probability constructed from the system shown in Ex. 3, using degrees 7, 5 (in its 'correct' version) and 8 (each with a doubled third above the root to give the fourth part). Moreover, both pieces have the same tempo marking, and Vexations begins with the same chord with which 'Bonjour Biqui, Bonjour!' finishes, almost as if one was meant to be an extension of the other. Thus, 'Bonjour Biqui, Bonjour!' is far from being the home-made musical 'Happy Easter' card that it might seem at first glance, and it might well reveal the same anguish over unreciprocated affection that found a more extensive and private expression in Vexations. For example, there can be no doubt that these ambiguous diminished chords are associated with Biqui/Suzanne, for they also occur as the first six chords of the nine Danses gothiques, begun by Satie on 21 March 1893 in an earlier effort to regain 'the greater quiet composure and the powerful tranquillity of my soul'[4] during their tempestuous affair, which lasted from 14 January until 20 June 1893.[5] As 'Bonjour Biqui, Bonjour!' and Vexations are the only pieces entirely constructed from these chords, it is reasonable to suppose that they were written in close proximity to each other, and that Vexations also dates from early April 1893. But as the manuscript is undated and Satie's problems with Valadon seem to have been virtually continual, it is impossible to be more precise. We do know, however, that it was Satie who broke off the affair (with the assistance of the local Paris police!). Since Valadon moved in with the banker Paul Mousis immediately afterwards, her relationship with Satie must have grown even more one-sided in its final stages.

I have taken the line here that Satie was expressing his own vexations in music in this extraordinary, private piece, which at the same time would vex (or intrigue) anyone else who came into contact with it - from performers and audiences to later musicologists like myself - in both its harmonic language and its unique concept. There is no evidence, however, that Satie ever intended Vexations to be published, and he never mentioned it in his surviving letters.[6] Gavin Bryars has suggested that as Satie 'refers to the bass melody, which precedes each harmonisation, as a "theme" . . . using a simple Rousselian method of letter substitution, "theme and variations" become "theme and vexations" '.[7] There is also the possibility, given Satie's fascination with the occult and with alchemy at this time, that he had something more mysterious in mind. As Andrew Hugill has kindly informed me,[8] Vexationes is the subtitle of the Coelum philosophorum by the famous Swiss alchemist Paracelsus (1493-1541), whose discoveries, which laid the basis for modern homeopathy, may well have been known to Satie the avid medievalist. Satie may also have seen himself as creating a new 'argotique' or hermetic language in his own 'Art gothique' of the 1890s, of which Vexations would certainly constitute the most arcane example, revealing its hidden secrets only to the initiated. Whatever the truth may be, it does seem that with his 840 repetitions (possibly a magic number) Satie intended that Vexations should seem to go on for eternity - as his own 'vexations' with Valadon seemed to do at the time - and that in so doing they should transcend the normal concepts of time and space, passing into another world of hypnotic forgetfulness and spiritual oblivion.

At the same time, however, Vexations is also highly organized from a numerical point of view. The symbolic numbers 3, 4 and 7 play an important role in this strange and obviously calculated piece: it is conceived in three musical sections and in three-part harmony; a complete performance is made up of four parts (A, Al, A, A2) because the third statement of A, indicated by Satie after A2, automatically begins the next playing; the interval of the tritone, which dominates the harmonizations of A, covers seven notes on the piano, and the original manuscript is arranged so that it consists of four musical systems occupying seven staves on the hand-cut paper. So is it possible that Satie had the Lucas summation series (which begins with these numbers) in mind as he composed it? If he used 'golden section' proportions in the first of his Trois sonneries de la Rose + Croix in 1892,[9] he would surely have known about the Fibonacci and Lucas series, for they provided the simplest methods of calculating these proportions (either as single numbers or as multiples of them) and were much discussed in artistic circles in the 1890s. Debussy, whom Satie first met around 1891, had already made use of these well-known series in his songs of the 1880s,[10] and his song 'Rondeau' (1882), for instance, uses the Lucas series to begin its second and third stanzas after 29 and 47 units of 3/8, as Roy Howat has shown.[11]

If we take this series (named after the nineteenth-century French mathematician Edouard Lucas, a fact which would surely have appealed to Satie), we find a striking series of parallels with Vexations. The series runs as follows: 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843 etc., each number being the sum of the previous two. The 'golden ratio' of 0.618 (used from ancient Greek times onwards) is reached with increasing accuracy as the series ascends: thus 7:4 = 0.75, 18:11 = 0.63 and 123:76 = 0.618. Of course, Satie was not using the series to calculate the proportions between one section and another here, as Debussy did; that would have been too derivative. But the following table strongly suggests that the various constituent musical and textual elements in Vexations were organized with the Lucas series in mind, for there are too many links for them to be merely coincidental. Thus we have:

1	piece
3	musical strands (A, Al, A2)
4	musical parts (A, Al, A, A2) in each complete performance
7	notes on the piano covered by the tritone in the upper lines of Al and A2 (e.g. a' to eb")
11	different notes in the 'thème' (A)
18	three-part chords in Al and A2
29	notes covered in the overall pitch range (f-a")
47	notes written in the treble clef in A2
76	notes or chords (4 x 19, including the final ties) in the music of A, Al, A, A2
123	letters in the title (*Vexations*) plus the curiously worded (NB) directions to the performer ('Pour se jouer 840 fois . . . sérieuses')
199	characters surrounding the musical notes (letters in the complete texts (185), plus punctuation marks, equivalent musical rests and repeat signs)
322	as the sum of the letters in the complete texts (185), the number of notes (133) and the repeat signs (4)

This is as far as the Lucas series can reasonably be taken, and the highest two numbers may well be serendipitous. But it is also worth remembering that the only deviant chord in Vexations (No. 2) comes at the 29th quaver of the piece, and that Satie had the kind of mind that delighted in abstruse calculations and numerology. It is also significant that 843 in the Lucas series is extremely close to 840 (and it could be maintained that this is one of the deliberate flaws that Satie built into all his compositional systems from the Ogives (?1886) onwards, perhaps to prevent imitation of them). But if the Lucas series works by addition, and we add the two symbolic numbers 3 and 7 together, the total is 10. If we then multiply the Lucas series numbers instead of adding them, 1 x 3 x 4 x 7 gives 84, and 10 x 84 equals 840 exactly, which provides (to my mind) the most plausible explanation of how Satie arrived at his magic figure. And the other interval used in Vexations, the major sixth, also covers ten notes (e.g. from c' to a' in chord 1).

It may have occurred to the reader by now that if Satie was simply playing with numbers

here, or if I was simply conjuring them up like rabbits from a hat, then similar parallels could be found in Vexations to fit the Fibonacci series (1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144 etc.). But apart from the obvious 1 and 3, and the fact that there are 13 crotchets of music in each strand, 34 different chords, and 144 notes struck in a complete single performance, there is no consistent overall application such as we find with the Lucas series. But given that Debussy used the Fibonacci series more frequently, this is only to be expected, as is Satie's individual application of the series to surface events rather than interrelating proportions. The symmetrical proportioning (of A, Al, A2 and the underlying hexachordal system) that goes hand in hand with the golden section in both Debussy and Satie is, however, the most obvious characteristic of all in Vexations, which is surely one of the most minutely calculated pieces of all time.

There can be no doubt that Vexations is also exceptionally forward-looking both for modern music and for Satie himself. If we look at the statement of his compositional aesthetic written when he was composing Socrate in 1917, we find several of his guiding principles already in operation in 1893. In so far as the theme of Vexations came first and the alterations took place within the superimposed harmonic system, we find the perfect embodiment of Satie's statement 'Do not forget that the melody is the Idea, the outline; as much as it is the form and subject matter of a work. The harmony is an illumination, an exhibition of the object, its reflection.'[12] And as Satie observed in the same credo: 'The harmonic potential of a melody is infinite, for a melody is only an expression within the overall Expression ... If there is form and a new style of writing, there is a new craft.' Both the Idea and the craft behind Vexations were, of course, absolutely new, and in retrospect the piece now seems as important to the development of twentieth-century music as Schoenberg's Erwartung or the minutely crafted serial works of Webern. Indeed, it was not until after World War II that audiences were really in a position to appreciate the true audacity of Vexations, which lay in its concept of 'anti-art' and in the way that the deliberate boredom induced by its multiple repetitions made listeners increasingly aware of the sounds of their surrounding environment. This helps to explain why Satie was so 'indispensable' to the development of Cage's own ideas, for 4' 33" would not have been possible without his rediscovery of Vexations and its initial period of recommended meditation. The most remarkable thing is that Satie always knew that he had been born ahead of his time; he knew exactly which compositions to publish, and when; and he surely knew that the way of cheating musical time he had discovered in Vexations would eventually be vindicated by time itself.

Footnotes

1) The manuscript, formerly in the collection of Mme Claude Rostand in Geneva, is now in the Archives de la Fondation Erik Satie, Paris (together with the manuscript of 'Bonjour Biqui, Bonjour!', which I discuss below). The earliest reproduction of the original manuscript of Vexations was in Contrepoints, vi (1949), opposite p. 8. I am grateful to Ornella Volta for allowing me access to these manuscripts, and to Steven Moore Whiting for providing me with a copy of the 1949 reproduction and for his many helpful suggestions during the preparation of this article.

2) Other complete performances have lasted between twelve and 24 hours; see Gavin Bryars, '"Vexations" and its Performers', Contact, No. 26 (Spring 1983), 12-20. Bryars also discusses the disturbing effects of such performances on both players and audiences. It is possible, however, that Satie conceived each playing of Vexations as lasting approximately one minute, with the whole performance thus lasting 840 minutes, or exactly fourteen hours. This depends on the interpretation of his 'Très lent' and on whether the performers follow Satie's instructions to play the theme between each of its two identical harmonizations. In fact, Satie's performance indications have been the object of much speculation. As Steven Moore Whiting has pointed out to me, it is impossible to be sure to what the `motif' that is supposed to be played '840 times' refers, given that Satie often called short musical cells 'motifs' in his sketchbooks. It is usually taken to mean the entire piece, but it could refer just to the bass 'thème' itself. As this recurs four times in each playing, this could be taken to mean that a complete performance could consist of only 210 playings of the four constituent parts (A, Al, A, A2). In addition, Satie's performance note

is not a definite instruction but, rather, a suggestion that if one wants 'to play this phrase 840 times in a row, it will be as well to prepare oneself in advance, and in the deepest silence, through serious immobilities' (implying contemplation or meditation).

3) A similar case of harmonic obfuscation occurs in the 'Affolements granitiques', the third of the Heures séculaires et instantanées (1914). Here Satie first notated the rising left-hand arpeggio and chords at the end of the piece in a straightforward F major and then rewrote them in sharps and double sharps in the final draft (Harvard University, Houghton Library, MS Ho 26).

4) The original French in the score (Paris, Bibliothèque Nationale, MS 10048) reads: 'Neuvaine pour le plus grand calme et la forte tranquillité de men Ame'.

5) See Ornella Volta, Satie Seen through his Letters, trans. Michael Bullock, London & New York, 1989, pp. 43-7, for a full account of this relationship.

6) Most of Satie's letters to Valadon were, in fact, never sent. Conrad Satie showed them to her in 1926, after Satie's death, and she then chose to burn them. The one letter he did send her, on 11 March 1893, shows that he was deeply in love with her, but even though they both lived at 6 rue Cortot, Satie was already having problems in arranging 'dates' to meet her (see ibid., pp. 45-7).

7) Bryars, '"Vexations" and its Performers', p. 13.

8) Private communication, 18 January 1992.

9) See my Satie the Composer, Cambridge, 1990, pp. 42, 157-8.

10) See Roy Howat, Debussy in Proportion, Cambridge, 1983, Chap. 4.

11) Ibid., p. 34.

12) Satie's compositional aesthetic was formulated on the cover of Paris, Bibliothèque Nationale, MS 9611, with the title 'Subject Matter (Idea) and Craftsmanship (Writing)'. The full text can be found in Erik Satie, Ecnts, ed. Ornella Volta, rev. edn., Paris, 1981, pp. 48-9.