The Twittering Machine: Sound Symbol of Modernity

The Artist-Musician

Paul Klee[1] is known to many musicians as "the artist with the fermatas," the one with the many musically suggestive titles such as "The Pianist in Distress," "The Literary Piano," "The Order of High C," "Old Sound," "A Master Must Pass Through a Bad Orchestra," "Fugue in Red," "Drawing in Two Voices," "The Canon of Color Totality," as well as scores of wordings reminiscent of music-theoretical books. And he may well be the envy of many a musicologist on account to his "Graphic Translation of a Three-part Passage from J.S. Bach."

Among the many composers who have been inspired by Klee's very musical paintings, the three most prominent—the American Gunther Schuller, the Englishman Peter Maxwell Davies, and the German Giselher Klebe[1]—have all gained particular popularity with just these works, and specifically with the rendering of the Swiss artist's vision of a mechanized bird concert. Klebe's *Die Zwitschermaschine* created a stir when it was premiered at the first post-war Donaueschingen Festival for New Music in 1950; Davies's *Five Klee Pictures* alerted the musical establishment in England to the then young grammar-school music teacher; and Schuller's biographers continue, despite his amazingly prolific output during the forty years since, to speak of his *Seven Studies on Themes by Paul Klee* as his most widely received work.[2] It is known

[1]For more details on Klee see pp. 593-595, on Schuller, Klebe, and Davies, pp. 619-624.

[2]Another composer to have been inspired by the same paintings is David Diamond; see his *The World of Paul Klee* of 1957, which includes "Dance of the Grieving Child," "Black Prince," "Pastorale," and "The Twittering Machine." Among musicians all over the world who react to the Swiss artist are the Argentinean Roberto García Morillo with his orchestral *Tres pinturas de Paul Klee* (1943), the Hungarian Sándor Veress with *Hommage à Paul Klee* (1952), also for orchestra, the Russian Edison Denisov with *Three Pictures of Paul Klee* for viola, piano, vibraphone, and double bass (1984), and even contributors from unexpected corners, like Roger Karschner and Charles Mangione with their rock album *The National Gallery Performing Musical Interpretations of the Paintings of Paul Klee* (1968, Philips PHS 600-266), which includes ten titles after paintings.

that Schuller was writing in response to a commission for a work that might become a "real repertory piece." As Oliver Knussen points out, Davies (and Klebe) "may have had a comparably didactic aim insofar as they present characteristic devices of the post-war New Music in an accessible guise for the average concert-goer."[3] So far as is evident from the literature, the three contemporaries never crossed paths; most certainly, their compositions originated independently of each other.

Paul Klee and His *Zwitschermaschine*

The Swiss-German painter, watercolorist, and master draftsman, Paul Klee, who is today considered one of the most original masters of modern art, was also unique in the way in which he combined highly developed talents for music and poetry with his creative talent in the visual arts. Having grown up in a family that was devoted to music, he himself became a violinist (he played for several seasons in the Bern Municipal Orchestra) and a very well-read amateur musicologist.[4] Moreover, he wrote many very accomplished poems. The decision to make painting and drawing the center of his life did not come easy to him, and it was only after his marriage to a pianist that he seemed content for his wife to be the professional musician in the family and concentrated fully on the complementary visual art forms. At the same time, all dimensions of his art were fortuitously influenced by his musical and literary sensitivities.

Klee created *Die Zwitschermaschine* in 1922, further developing an idea he had first expressed a year earlier in the ink drawing, *Konzert auf dem Zweig*n (Concert on the Twig). *Die Zwitschermaschine* is a blend of water color with pen and ink oil transfer. This technique, whereby Klee copied, with the help of a sheet covered on one side with black oil paint, drawings onto a surface done in another medium, allowed him to explore new facets in the relationship between figure and background. The miniature (16^{1}/8" x 12"), deceptively childlike and innocently witty at first glance, can be interpreted at many levels, as the art-historical literature

[3]Oliver Knussen, "1957-64: Cirencester and the 'Five Klee Pictures'," *Peter Maxwell Davies: Studies from Two Decades* [Tempo Booklet No. 2], Stephen Pruslin, ed. (London: Boosey & Hawkes, 1979) pp. 8-12.

[4]Klee's diary entries and correspondences are replete with penetrating discussions of musical questions as well as critical analyses of musical works and their performances. During the season 1911-12, he was the corresponding critic for the Bern periodical, *Die Alpen*, commenting on art, concerts, opera, and theater in Munich.

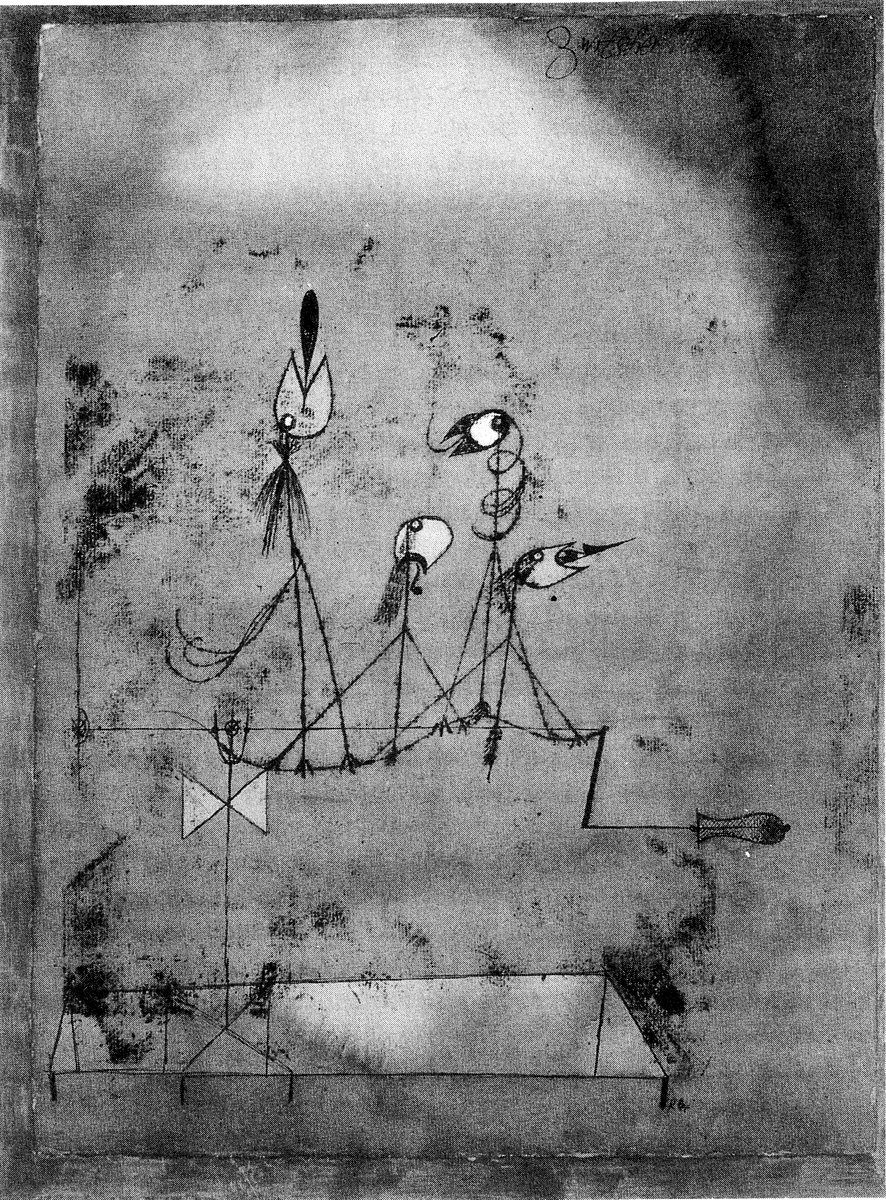

PLATE 31: Paul Klee, *Die Zwitschermaschine.*
The Museum of Modern Art, New York.

growing around it proves. Even the brief description given by H.W. Janson in *History of Art* suggests some of the depth expressed in Klee's sparse design. "With a few simple lines, he has created a ghostly mechanism that imitates the sound of birds, simultaneously mocking our faith in the miracles of the machine age and our sentimental appreciation of bird song. The little contraption (which is not without its sinister aspect: the heads of the four sham birds look like fishermen's lures, as if they might entrap real birds) thus condenses into one striking invention a complex of ideas about present-day civilization."[5]

The "four sham birds," along with the slightly wavy twig on which their thin legs are perched, are almost identical with those Klee drew in *Concert on the Twig*. Each consists of a stylized head with an open beak and a single eye, a stick-figure body and corresponding single-line legs. Weird as their appearance may be, it is easy to distinguish four different poses. Are these different temperaments? characters? reactions to the mechanism that supposedly drives them? From their open beaks protrude variously shaped caricatures of a tongue, easily interpreted as symbols for the different nature of their utterances.

Beginning from the left, the first bird, whose body is stretched tall with the head cocked backwards, emits a vertical form that could be mistaken for the handle of a spoon, were it not for the precursor drawing in which a round black dot, placed into the corner or the beak and thinly connected with the "handle," reveals an exclamation point. With this punctuation mark and the overall body posture, complete with the open eye and the neatly feathered crest, the bird seems self-possessed and assertive. It is also the only one among the four that has a tail, albeit of wispy hair-lines only, which is seen floating in the air in a rather relaxed manner. The second bird from the left reaches to little more than half the size of the first. This is partly due to the fact that its legs are spread wide, as if in a desperate attempt not to lose footing (a fear caused, presumably, by the whirling motion to which the twig is subjected). Where the first bird is assertive, this one is despondent. It hangs its head straight down, with the crest falling over its open beak. The utterance emerging from its throat is depicted as a curled shape, limp and listless, as if wanting to coil back into the head. The third bird, taller again, looks sideways and slightly down, away from the crank that threatens all of them. The black thread of its "song" is curved upwards, combining the cunning of a fish hook with a lack of direction. Its crest spirals downwards, surrounding the

[5]H.W. Janson, *History of Art* (Englewood Cliffs, N.J.: Prentice Hall, 1962), p. 527.

vertical stick that represents its body as if the bird was hugging itself to give itself courage. Where the eyes in the other three birds are small, thin black circles, this creature shows a hugely oversized eye, white with a dark, anxiety-stricken pupil. The fourth bird is portrayed with yet another character. As Maurice Shapiro describes it so well, it "faces forward, to the right, advancing. His head is taut and compact; his crest streams out behind in rays; his eye is bright and directed. From the tightly drawn mouth there extends a needle-sharp barb, two-ply, machined like a ratch, which is aimed in the direction of the threatening dark mass that moves in from the upper right of the picture; faced by this formidable creature, the clouds open and a space clears on the extreme right. If this demoniacal woodpecker sings, the notched barb in his throat will sound more rattle than twitter."[6]

If these are the birds that are to produce the twittering, what exactly is the machine and how does it activate them? Klee limits himself to the merest hints: a crank at the right-hand side, with a handle large enough to appear commanding, if not threatening, attached to a thin horizontal thread that intersects at various points with the curved twig but ends in a wheel fastened to nothing that the viewer can detect. Below this arrangement, there is a rectangular shape that, to this beholder, seems to double as a rudimentary stage for the bird concert and a safety net should one of them fall.[7] The strange object seen to the left of the group of birds will represent a music stand when perceived in connection with the stage, or else as a device pertaining to the machine, both supporting the thread that operates the wheeling motion and keeping the birds confined, with its harpoon-like points, from any sideward escape.

There are, then, at least three rather different ways of reading Klee's picture. If one chooses not to regard the stick-figures as deliberately pitiful, one could see a witty drawing of a machine that attempts to use birds' voices for a concerted action, driven by a crank, and thus controlling the speed and perhaps the volume of the twittering. This reading need not be entirely pessimistic; there would be nothing that prevents the individual birds from varying their tunes as they are used to doing; nor would there be any reason why the birds, once recovered from their shock

[6]Maurice L. Shapiro, "Klee's *Twittering Machine*," *The Art Bulletin* 50/1 (March 1968): 66-69; 68.

[7]Shapiro, by contrast, interprets the rectangular shape as a trap, a cloth spread over a ditch, and sees a link between Klee's depiction and medieval designs of the Wheel of Life (cf. Maurice Shapiro, "Klee's *Twittering Machine*," pp. 68-69).

after the forced motion has stopped, might not resume their singing without any input of the "machine." In another interpretation, the birds may be seen as so denatured, reduced to little else than the beaks that are to produce the desired sounds, that Klee's message comes across as a harsh criticism of our time and its infatuation with machines. This reading might include a socio-political component; most likely it would imagine the birds as deprived by an anonymous power of their self-determination. Finally, one could focus on the four differently characterized creatures, seeing them as epitomes of four ways of reacting to the threat of nonsensical automatization. In this scenario, the crank, or the fact that what Klee draws is really a manually operated contraption and as such subject to human whim, failure, overexcitement, tiredness, etc., may not be so central as the perspective of possible attitudes towards any kind of impersonal interference with basic freedoms. (Freedom to sing = freedom of speech?)

Peter Maxwell Davies's Joyful, Crank-Assisted Bird Concert

Davies conceived his orchestral composition, *Five Klee Pictures*, for the students of Cirencester Grammar School in Gloucestershire, whose director of music he was from 1959-1962. That school children should be able to play 'modern' music that, apart from intricacies on the level of the tonal and rhythmic organization, required improvisation, as the students at Cirencester did, took everybody but the composer himself by surprise.[8] Many have argued that this work served as the seed of a new approach to music education in Great Britain.

The full score was subsequently lost. When a set of orchestral parts was discovered, the composer restored the full score, revising and developing the work in the process. In particular, he expanded the third movement, "The Twittering Machine," and rewrote the final piece, "Ad

[8]Stephen Arnold, who was a pupil at Cirencester when the original version of *Five Klee Pictures* came into being, was rehearsed, and saw its first performance, writes about this experience: "This thriving and varied musical life did not evolve from any theory of music education which could be learned and reapplied elsewhere; neither was it the case that the children possessed anything beyond average musical ability. It is more likely that it derived from the fact that Davies's talents as a schoolteacher at that time fed his own compositional needs, and that the alchemy of the interacting personalities of the school community resulted in a vigorous but, at the same time, simply moving group of pieces by both master and pupils." (Stephen Arnold, "Peter Maxwell Davies," *British Music Now*, edited by Lewis Foreman [London: Paul Elek, 1975], p. 76.)

Parnassum," in a fashion that resulted in twice the length of the original.[9] With an instrumentation now adjusted to the possibilities of professional orchestras, the revised work received its first performance in 1976.[10]

"The Twittering Machine" is the central of the five movements in a composition with a total performance time of 9½ minutes. The instrumentation calls for 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 trumpets, 2 trombones, percussion including side drum, bass drum, cymbals, castanets, wood block, 4 temple blocks, triangle, piano, and strings. (Additional percussion instruments required for the other four movements are tam-tam, tambourine, nightingale, and xylophone).

Three features are immediately striking in this piece. In terms of texture, one distinguishes three levels: a primary ostinato group heard throughout without pause, a pair of voices adding two secondary ostinati,

[9]According to the (unattributed) "Extended Note 1" found among bibliographical material concerning *Five Klee Pictures* on the composer's webpage, the other four pieces can be described as follows. No. I, "A Crusader," is presented as "a strutting, 'primitive' structure, in which percussion and the rest of the orchestra play alternate bars, each successive percussion bar gaining a beat, each orchestral bar losing one. [...] based on one of Klee's square portraits of a grim but in this case also fragile military face. Davies's interpretation is a strident, strutting march and a structure of odd simplicity: percussion alternates with the full orchestra, the former increasing in strength from one beat to twelve, the latter progressively abbreviated from twelve to one as chords are lopped off from the front. The toy soldier is wound up to show real menace." No. II, "Oriental Garden," is "an adagio quartet for oboes and clarinets, the simplest possible melodic figures expressively shaped by octave transpositions and tritonal harmonies. The only movement remaining unchanged from the original [...] an exotic snapshot in slow tempo, with brief melodic phrases on one or two oboes accompanied by chords from a pair of clarinets." No. IV, "Stained Glass Saint," follows with "a devout and melodically sonorous slow movement, the ultimate solemnity of which may be judged from the contribution of the piano—and an unusual sound emanating from the percussion department towards the end. [...] The most characteristic piece of the set [...], the miniature prototype of many Mahlerian slow sections in Davies's later works, and also the first piece to show his disconcerting manner of mocking his own seriousness. The rapt, inward tone is developed in music for solo woodwinds and strings which rises to a climax with the entry of the full orchestra. Then the feeling is wrenched into quite another direction." No. V, "Ad Parnassum," is "A movement which points the way, stylistically and almost symbolically, towards another world. The techniques and textures become decidedly more 'modern', brass and tremolo strings leading, albeit concisely, to a conclusion of impressive resonance. [...] provokes an ascent through four octaves from a low C on solo cello, gathering in speed and fullness of scoring. The climb issues in alternating calls from brass and woodwind, and there is then a coda, newly composed in 1976 and taking the form of a brilliant virtuoso canon for two trumpets over tremolandos in the strings."

[10]All references are to the score published in 1978 by Boosey & Hawkes Music Publishers Ltd., London.

present in all but the very last measures, and twenty further voices. In terms of notation, improvising parts exist on each of the three levels side by side with parts in fixed notation. In terms of emotional structure, the sixty-four measures of the composition (notated as eight sections, each appearing as a repeated four-bar group) are laid out as a protracted, *crescendo ed accelerando* covering three quarters, followed by a sudden hush when the original tempo and volume is restored, and concluding ever more slowly, softly, and thinned out. Other features require closer attention. In terms of register, the two continuous ostinato groups establish a 5½ octave range that is ever more densely filled in but never exceeded by the gradually joining voices. In terms of tonal complexity, the most repetitive figures—the ostinati in the solo cello and first trombone—take the lead by presenting two clusters that add up to the full chromatic scale, while the later-coming voices comprise fewer and fewer pitches, until two of those that join for the shortest while are restricted to a single repeated note each.

The primary ostinato is presented by trombones and low strings. The tutti violoncelli and double basses play a four-part sequence consisting of an ascending diminished triad in regular quarter-notes, followed by three transpositions each one minor third up. In this simple manner, this ostinato pattern establishes the four central pitches of the piece: E–G–B♭–D♭. Meanwhile, the solo cello alternates with the first trombone in presenting a curved figure of eight eighth-notes. Each figure ascends from its first note through flattened steps to the diminished fifth and redescends through two raised pitches, with the result that it covers all seven semitones within the tritone. Since this is later complemented, in each of the two partner instruments, by the cluster between the tritone and the octave (see example 66), the primary ostinato voices really make use of all twelve semitones.[11] Such 'all-encompassing' circular shapes seem to paint visual images of wheels. This impression is reinforced when it becomes clear that each of these figures, exceeding a single three-four measure and concluding on the first beat of the next, overlaps with the beginning of the complementary figure—passing on the motion as one cog-wheel to another, an ingenious musical image of the mechanical wheel in the contraption depicted by Klee.

[11]The second trombone doubles the solo cello's second eighth-note in every bar. Beyond the mere accompaniment, this extra emphasis on a weak-beat note parallels the syncopated beat Davies creates in the trombone through accents on the corresponding second eighth-note.

1-64

trombone 1
solo violoncello (pizz.)
(pizz.)
violoncello /bass
trombone 2

(two clusters = 12 pitches in the solo violoncello:
E F F♯ G A♭ A B♭ + B♭ B♮ C D♭ D♮ E♭ E♮ [= B♭ C♭ C♮ D♭ E♭♭ E♮♭ F♭]
two clusters = 12 pitches in the first trombone:
G A♭ A B♭ C♭ C♮ D♭ + C♯ D D♯ E F F♯ G)

EXAMPLE 66: Davies, "The Twittering Machine," primary ostinato

While the first ostinato group is thus based on two one-bar figures repeated in transposition (so that their joint motion is heard 4 x 64 times in all), the secondary ostinati establish a four-measure unit. The piano, arpeggiating in three segments from m. 2 to the first beat of m.4, and the four horns, whose three homorhythmic attacks describe an increase-decrease gesture through weak beats (from the third beat of m. 2 to the last eighth-note in m. 3), together highlight the middle of the phrase.

Of the four ostinato groups, only the horns do not undergo any improvisatory changes. (They are also the only component of the texture that does not participate in the protracted crescendo, although one wonders whether real-life musicians would resist the steady pull around them.) From m. 9 (section II) onwards, the piano begins to vary its arpeggios *ad libitum* (presumably remaining within the given pitches). In m. 17 (section III), the solo cello starts syncopating its little curve, and eight measures later, the trombone follows suit. Piano, solo cello, and trombone continue improvising rhythm and pitch order respectively up to the climax in m. 48, after which they resume—along with the original tempo and volume—the original, regular form of their figures.

From m. 9 (section II) onwards, the ostinato groups are joined, in irregular but well-spaced succession, by the remaining strings and winds as well as by five percussion instruments. (For the order and time of entry, see figure 6 overleaf.)

With a few brief exceptions, the strings and winds present twobar figures, which they then repeat up to the climax, thus overlaying the one-bar figures of the primary ostinati and the four-bar gestures of the secondary group with yet another structural dimension. For the percussion instruments, by contrast, the composer notates only the measure of

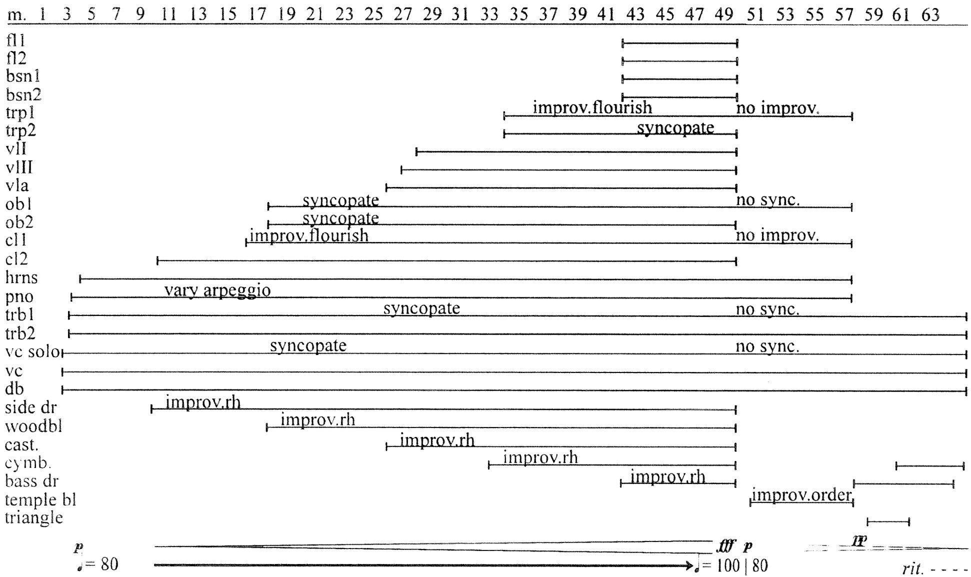

FIGURE 6: The voices in Davies's "The Twittering Machine"

entry, encouraging free improvisation thereafter. The five rhythmically free patterns, complemented by *ad libitum* syncopations of three-note figures in the oboes, are juxtaposed with free variations of pitch and contour in the first clarinet and the first trumpet. During the eight measures leading up to the *fff* climax in m. 48, twelve voices are engaged in repeating patterns with variation of either rhythm or pitch or contour, fifteen reiterate figures without changes, and one (the bass drum) plays developmental changes specified in the notation.

After this climactic moment, the music returns to the original tempo and volume level, while the voices added to the ostinato figures are limited to new, relaxed three-note gestures in first oboe and first trumpet (simple despite their technical relationship in a mirror canon), repeated trills in the first clarinet, and brief interjections of temple-block figures (repeated with varied contours). In m. 57 these "voices" drop out along with those of the secondary ostinato, leaving only the primary patterns, metrically marked by triangle, cymbal, and bass drum, to fade towards what is nevertheless heard as a sudden cessation of the mechanical motion.

To speak about "the" musical impression of this organized chaos is, of course, not meaningful given that every performance, by the same players but even more so by a different ensemble, will result in differences on myriad levels. Yet whatever the details in a specific interpretation, the general idea of the portrayal remains. The "twittering" we hear has all the variety and simultaneous fundamental monotony of the simple birds Klee draws. The repertoire of the voices that are added to the basic mechanism of the ostinato patterns consists of just a few pitches, repeated, with little room for variation, innumerable times. Appreciating the composition in relation to Klee's depiction, the basic ostinato patterns seem to epitomize the mechanical contraption that, in this image of modern denaturation, sets the bird calls into motion. Once the cog-wheels are turning, they start gathering one bird call after another, gain ever more momentum and intensity, and gradually draw all voices around them into a whirling motion.

No doubt it is the machine that, with the precision of its movements holding a reign on all it initiates, keeps all bird calls metrically aligned. One wonders whether Davies was only being practical (not wanting to stretch the intended first performers—and listeners— beyond their limits) when he decided to keep the composition in very traditional three-four time throughout, without any of the polymetric juxtapositions his older contemporary, Olivier Messiaen, was using in the same decades for his many bird pieces. But then again, there may well be a statement here, one not far from what Klee may have intended: that man-made machines deprive nature of its glorious freedom of expression, confining it into the narrow boxes of that which the human mind can grasp without exerting itself.

Tonally, the composition benefits from such an ordering force, which makes it easily accessible to the listener. Davies organizes the many different figures in such a way that the four main pitches are supported equally: E by the double basses, violoncelli, and trombones at the beginning of each four-bar phrase, G by the clarinets and first violins, B♭ by the oboes and bassoons, and D♭ by the violas, trumpets, and flutes. Focusing on the tonal aspect, the composition can thus be heard as a protracted ornamentation on a diminished-seventh chord, increasingly wilder as the mischievous (or simply very excited) person operating the wires turns the crank ever faster, relaxed again and ever slower when, exhausted from the vigorous effort, the human motor of the avian concert slackens and finally stops the action.

Gunther Schuller and the Pitfalls of Mechanized Bird Song

Schuller wrote his musical response to pictures by Klee in 1959, at the same time as his colleague on the British Isles. Like Davies he places "The Twittering Machine" in the center of a cycle. Of the additional six pictures he chooses for his composition, entitled *Seven Studies on Themes by Paul Klee*,[12] three have titles bearing explicit allusions to music: no. 1, "Antique Harmonies," no. 2, "Abstract Trio," and no. 7, "Pastorale."[13] The work was commissioned by the Minneapolis Symphony Orchestra, who premiered it on 27 November 1959 under the baton of Antal Dorati.

Like Davies, Schuller also makes use of musical devices that offer themselves for a transmedialization of Klee's vision of a contraption with wires activating bird heads to sing. Ostinato figures represent the mechanical apparatus with its ever-recurring incessant circular motion, and a gradual increase of tempo at the beginning, matched by a slackening and return to a more comfortable tempo for the final section, epitomize the part played by the human hand operating the crank. Furthermore, the 61 measures in Schuller's piece correspond roughly with the 64 measures in Davies's movement, the (brief and vigorous) *accelerando* from ♩ = 80 to ♩ = 108-112 and crescendo from *pp* to *ff* in the American composition matches the (almost unbearably protracted) *accelerando* from ♩ = 80 to ♩ = 100 and crescendo from *p* to *fff* in its English counterpart, and the reprise at the original tempo, which in Davies's work occurs after exactly three quarters, segments Schuller's after exactly two thirds.[14]

[12]Vienna: Universal Edition, 1962.

[13]The remaining three movements are (no. III) "Little Blue Devil," (no. V) "Arab Town," and (no. VI) "An Eerie Moment." In an article on Schuller's cycle, Amanda Burt paraphrases the composer's own descriptions of some of the seven pieces as follows: "Schuller says that these blocks [the differently colored blocks created by Klee's horizontal and vertical rows that contain numbers and form his famous 'magic square'] are represented musically by slow moving parallel organum starting in the low warmth of the woodwinds and strings, moving through the bright yellow (trumpets) and back to the dark shades in the periphery." In "Arab Town," Schuller uses a Tunisian scale as a basis for portions of the piece; at some point an indication is given for B and E to be tuned a quarter tone lower. In "Pastorale," which Klee subtitled "Rhythms," Schuller employs series of rhythms that "are varied from one voice to another and provide the basic accompaniment to support the pastoral horn and clarinet." Amanda Burt, "Interdisciplinary Study: Art and Music," *MUSART* 24/2 (November-December 1971), pp. 7-14.

[14]In Davies, *tempo primo* occurs at m. 49, dividing the piece 48 : 16 = 3 : 1. In Schuller, the structurally corresponding *A tempo* restores the (accelerated) tempo, after an extended ritardando, at m. 41. Owing to the irregular meter in mm. 41-43 (where $\frac{2}{4}$ + $\frac{3}{4}$ + $\frac{3}{4}$ add up to two $\frac{4}{4}$ bars), the proportion in measures of 40 : 21 equals a proportion in beats of 2 : 1.

This is where the similarities end. Schuller's ostinato, presented by four brass instruments (horns), three-part strings (the viola section playing *divisi*), and three woodwinds (two oboes and English horn, entering late and dropping out early), does not continue throughout the piece but rather segments it in interesting ways. The first statement spans eight measures, the second eight beat, and the third eight sixteenth-notes; in the four-four time of the piece this translates as a twofold diminution to a quarter, or 8 𝅝 : 8 ♩ : 8 𝅘𝅥𝅯. The three participants in the ostinato differ from one another only minutely. The woodwinds in triplet eighth-notes, the horns in sixteenths and the violas in sextuplet sixteenth-notes all play with the four-note chromatic cluster D♯–E–F–G♭ in such a way that all four pitches are heard simultaneously at all times.

During the second half of the initial ostinato passage, the representation of the mechanical device is colored with the first "twittering" noises: individual attacks in the highest register of two piccolos, flute, oboe, clarinet, solo violins I and II (three soli each), soon joined by almost equally high-pitched notes in trumpet, English horn, and violas (two soli). Later in the piece, once the ostinato-carrying instruments have fallen silent, these timbres will be supplemented by even stranger avian sounds, produced by a bassoon playing in the highest register and a solo violoncello playing in harmonics. As example 67 shows, the rhythm of these twitters is utterly complex, and while the volume is different for each attack, the general level increases as the ostinato recedes in diminuendo and thinned-out participation.

EXAMPLE 67: Schuller, The "twittering" pitches in measures 5-8

This twittering, lest it be forgotten, is machinated by the turn of a crank and the wires that activate (presumably artificial) avian heads. Befitting for a music supposedly created with the help of such a contraption, the pitches are severely ordered along the lines of serial composition. The twenty-four pitches shown in the example above represent

the original of a twelve-tone row (B♭ B F G E♭ F♯ A A♭ D C♯ C E) and its untransposed inversion (B♭ A E♭ C♯ F D B C F♯ G A♭ E).

The extensive passage following the end of the initial ostinato (mm. 9-32, beginning at cue A and ending before D) combine the above-listed bird calls with two percussion instruments, a single wood block (to be struck "with wood ball sticks, one light, one heavier") and a large gourd (to be scraped). While the two untuned instruments each embark on a free play of rhythms that does not contain any conspicuous repetition throughout the twenty-four measures, the "bird calls" are laid out in three corresponding "phrases"—as much as this word applies in a deliberately non-melodic piece. In terms of their pitch organization, the timbral sequence, and the volume of the individual attacks, mm. 9-16 serve as a model for two variations in mm. 17-24 and 25-32.[15] The tonal structure strings together the following four-and-a-half transpositions of the row:

the untransposed retrograde	E C C♯ D A♭ A F♯ E♭ G F B B♭,
the untransposed retrograde inversion	E A♭ G F♯ C B D F C♯ E♭ A B♭,
the original, transposed to semitone 2	B C F♯ A♭ E G B♭ A E♭ D C♯ F,
the inversion, on semitone 2	B B♭ E D F♯ E♭ C C♯ G A♭ A F,
+ half of the retrograde, on semitone 2	F C♯ D E♭ A B♭.

These pitches, presented not in the context of melodic lines but as individual attacks, cover a dynamic range from *pp* to *ff* in the register between B♭^{4} (bassoon) and F♯^{7}. The two subsequent phrases are identical with regard to the moment of attack, the instrument allocation, and the dynamics.[16] They are varied insofar as each individual bird call is now split into repetitions: two- and occasionally threefold in mm. 17-24 and between two- and sevenfold in mm. 25-32.

This "theme with two variations" built from row transformations is followed by an eight-bar phrase that is held together by a long ritardando, a slackening down to ♪ = 54, i.e. one quarter of the main tempo of ♩ = 108. During this dramatic deceleration, the entire body of musical voices is heard descending through more than three octaves. The effect is further enhanced in terms of timbre: the brightest voices disappear and are substituted, if only for a few notes, by bass clarinet, contra bassoon, trombone,

[15]Note that one of Schuller's cues is confusing in this context. While A marks the beginning of the first of these phrases, C the beginning of the third, and D the beginning of the subsequent section, the letter B occurs in the middle of the second phrase and some notes into a new row transformation.

[16]The only deviation, a *pp* in the variations instead of the *p* for the sixth attack in the model phrase, is probably an oversight rather than a deliberate change.

and solo bass. This plunge into the low register uses none of the tonal models introduced so far, neither the chromatic cluster of the ostinato nor the twelve-tone row. Instead, maintaining a continuation of the complex rhythms characteristic of the bird calls, many of the individual voices now present not individual pitches but falling semitones—at first still with some of the note splitting just introduced, but eventually ever less actively. The interesting fact that the drastically decelerating descent includes, at its slowest, falling quarter-tone segments and ends with bass notes that, according to the composer's marking, droop in little *glissandi*, seems to suggest that Schuller has in mind a very tangible image: the twittering-machine mechanism, winding down as the hand that turned the crank is getting tired or bored, is reaching a degree of slowness where it no longer guarantees accurate action; the effect is like the out-of-tune flattening of notes on a record not keeping its turning speed.

After a *fermata* and a brief general pause, the ostinato figure embarks on its second statement (one quarter in length of the initial eight measures, as mentioned earlier). All is contracted here; especially the crescendo with which the cluster figures are launched is compressed into a single beat. During the equally abbreviated diminuendo that follows, the "bird" voices, juxtaposing a powerful crescendo, reverse their earlier plunge and ascend rapidly. One may wonder whether "*A tempo* (♩ = 108-112)," which denotes a *sudden* return to the main tempo, is not counteracting the message heard in the musical parameters themselves, which strongly suggest a powerful rewinding of the "bird-call" mechanism throughout mm. 42-43.

In m. 44, the last of the ostinato-carrying voices has once again left while wood block and gourd, which had retreated as soon as the mechanism started losing its momentum, resume their participation. As the bird calls in their high register resume where they had left off, Schuller ingeniously creates the impression that they begin in mid-action: m. 44 picks up at the variation of the second measure within the eight-bar bird-call phrase, thus beginning with only the latter half of the row retrograde. From here, the piece works its way backward, albeit with some abbreviation. Identical in all instruments (including the untuned percussion), mm. 44-50 repeat the most elaborate variation heard in mm. 26-32. The half-phrase that follows recalls the somewhat simpler first variation (mm. 51-54 = mm. 17-20) but is complemented, in the second half of the phrase, by the single-attack style of the unvaried model (mm. 55-58 = 13-16).

After the first piccolo has sounded the final note of the twittering "theme," there is a suspenseful pause. Then the third statement of the ostinato makes its very brief appearance, sounding somewhat like the last grinding of a mechanism that has run hot: within a mere half measure, the four-note cluster is presented complete with a very much compressed crescendo + diminuendo (*pp-f-pp*). After another silence, the piece closes—or the machine screeches to a final halt—on what may be heard as a strongly misshapen C-major chord.

Giselher Klebe's Four Twittering Creatures in Distress

Of the three composers inspired by Klee's picture, Klebe is the only one who focuses on the individuality of the birds and their reactions as they are subjected to forced motion and enunciation. His preface in the autograph explains what has been his goal. "The musical concept adopted the pictorial layout of the picture by Paul Klee and thus mounted the four 'twittering components' onto a 'machine'-like rack."[17]

Klebe's composition must thus be understood first and foremost as a four-part character sketch. The common thread that runs through the single components is certainly full of repetitive rhythmic gestures, as is to be expected in any musical portrayal of machines. However, it is not so much the contraption itself that is depicted here as the way the four creatures perceive their fate in its bonds.

This effect, which conveys itself very powerfully to a listening audience, is perhaps less obvious for one who meets the work through the score alone. For the eye, the four consecutive tempo indications—*Allegro* with ♩ = 116, *Andante* with ♩ = 60, *Moderato assai* with ♩ = 96, *Allegro* with ♩ = 116 (Tempo I)—suggest the layout of a traditional four-movement symphony, even in the absence of any intermittent silences or *ritardandi* between the sections. For the ear, the impression is different. It is useful to begin by tracing the thread that holds the "four birds" together before exploring the musical portrayal of their contrasting characters. This thread, which binds sections that differ in vivacity and mood in much the same way as the shared bondage in the teeth of the "machine" unites Klee's birds of different temperament, manifests in a

[17]Die musikalische Konzeption übernahm die zeichnerische Grundform des Bildes von Paul Klee und stellte so die 4 "zwitschernden Teile" auf die Basis des "maschinen"-mäßigen Gestells.

series of metamorphosing transitions. (This is perhaps the place to mention that the full title of Klebe's composition is *The Twittering Machine: Metamorphosis on Paul Klee's Painting by the Same Name, for orchestra.*[18])

The initial *Allegro* moves in fast and forceful sixteenth, interspersed with only a few passages in triplet eighth-notes. Especially during the ten-measure pedal in bass, bassoon, and tuba with which the section ends, the texture evolves in what amounts to a three-part polymetric layering. The backdrop consists of a metrically displaced and irregularly repeated ostinato in the percussion and a frequently interrupted unison pulsation in the strings, derived from the *Allegro*'s principal motif but whimsically accented until it gets drawn into the percussion's patterns. Against this, the winds unfold a homophonic melody in which syncopations or accents on the fourth eighth-note of a bar, more and more pronounced as the section draws to a close, create the impression of an underlying dotted rhythm. This rhythm, in turn, is carried almost intact[19] into the dotted eighth-notes of the *Andante* (♩. ♪ = ♪.♬). At the transition from *Andante* to *Moderato assai*, a similar transmutation of one mood into another takes place. While time and tempo are ostensibly contrasted (4/4 ♩ = 60 versus 2/4 ♩ = 96), the composer employs syncopations and metric shifts to obfuscate any all-too-simple juxtaposition. The beginning of the *Moderato* consists of a thoroughly irregular sequence of units with three and five eighth-notes; they are later supplemented by gestures of four, seven, and nine eighths. The smallest of these units which, with three eighths, opens the section, occupies roughly the same time as a full beat in the preceding *Andante*.[20] It is as if a ball was being handed over from one player to another. This character, however, cannot make up its mind about the stance to be adopted. All through the section, accented downbeats remain the exception rather than the rule, so much so that no metric framework of any kind is ever established for listeners not following the score.

[18]Die Zwitschermaschine, Metamorphose über das gleichnamige Bild von Paul Klee, für Orchester.

[19]One wonders whether, assisting in a performance, Klebe would really have insisted on the minute non-congruency of the movements' tempi, with a requested 116 : 60 instead of 120 : 60 or 116 : 58. The recording made by the symphony orchestra of the South West German Radio under Hans Rosbaud, DMR 1004-DMR 1006 Deutsche Harmonia Mundi 1981 (volume II [1945-1950] of the three-part "Zeitgenössische Musik in der Bundesrepublik Deutschland") seems to translate the pulse directly from one piece to the next, in simple proportion.

[20]In *Moderato* ♩ = 96, ♩. = 64; compare this with ♩ = 60 in Klebe's *Andante* section.

Finally, at the seam between *Moderato* and *Allegro* (Tempo I), the connection is thematic: a little more than half-way through the third section, the principal motif of the *Allegro* is recalled, only to be subsequently distorted and liquidated. Then, once the tempo-I pulse is restored, the process is reverted. One of the *Allegro* section's secondary motifs, followed by a reminiscence of the *Moderato* section's initial three-eighth unit (now in faster pace, and with brief recollections of *Andante* material thrown in), leads through at first only remotely recognizable derivative forms ever closer to the *Allegro*'s principal motif. This rather aggressive gesture then dominates the final two thirds of the section.

Having established the structural axis that holds the four sections together, let me take a brief look at the way in which they portray the different characters. The first section—like the bird to the left with its erect posture and beak pointed heavenward—is very assertive and self-assured. In fact, misleading as such simplistic correspondences generally are, everyone listening to the music with Klee's miniature before their eyes will be tempted to hear the slashing full-orchestra *sf* strokes heard throughout the *Allegro* as instances of the bird's exclamation-mark enunciation. The refrain-like material heard in irregularly interrupted sixteenth-notes in the strings gives a picture of anger. Its stridency is created by the juxtaposition of the repeated D♯ in violin II and the E-based figure in first violins and celli. Alternating with these straightforward calls of defiance, the motivic material shows no sign of the paucity of expression expected from any position of enslavement. This singer presents eight distinct melodic gestures and one powerful rhythmic ostinato. The motifs differ in texture from solo to homorhythmic duet and chordal setting, involve all the instruments of the orchestra,[21] and are tonally cast in a free form of dodecaphony which, although it often reaches the full set of twelve semitones, is not confined by rules of serial sequencing. The rhythmic ostinato, presented in the percussion, is free in its own way, observing neither metric preferences nor regular spacing between recurrences. Much as this bird may be bound into the machinery of percussive sixteenths that pervades the section, it manages to maintain a great repertoire of self-expression. Ironically, this somewhat surprising independence of the machinery that allegedly drives the first of the

[21]The trumpet and trombone soli are particularly striking (see mm. 136-146 and 147-152), as are the extensive stretches of syncopated woodwind chords (mm. 162-187) and the triumphant unison statement of woodwinds and brass of one of the melodic motifs with which the movement ends.

singing heads is felt most acutely when listeners are struck by the sudden general pauses (particularly the very dramatic, not explicitly indicated one in mm. 126-127). My own impression is not so much that the bird simply pauses, but that in these moments it establishes its refusal to be driven by the crank to continue its forced twittering in a mechanical, not voluntarily initiated way.

In the *Andante* section, Klebe portrays the dejected, literally crestfallen posture of the second bird in a pattern based on the above-mentioned dotted rhythm, juxtaposed horizontally and often also vertically with triplets. Double basses in weary-sounding *pizzicato* pulsations underlie solo entries that develop into complicated details, as if the anxious bird found itself entangled in just too many wires. The duet of two trumpets with cup-mutes confirms this character portrayal also in the realm of tone color.

The third section is deceptive in its verbal indications. Although the tempo marking suggests a moderate pace after the preceding slower one, the actual impression of the music is for long stretches one of dread-filled stasis. Here the rhythm seems often frozen, and a very limited number of harmonic soundscapes keeps recurring. When, as a contrast, the motion picks up, the sudden vivacity seems to suggest madness and is far from any joy. This is powerfully conveyed through the means of a rather unusual timbral combination: an interplay of brief *staccato* utterings on the piano with the xylophone and the drum and another very dry percussion instrument.[22] The dramatically enlarged eye in Klee's third bird and its strangely shredded crest find an eerie musical equivalent here.

The recapitulation of material from the first section, implied with the "tempo I" in the heading of the final section, is compressed (just as the bird at the far right is much shorter and more compact than the craning one at the far left). This reprise envelopes, in its first half, reminiscences from the two intermittent sections, as if this bird was briefly trying on the full array of possible reactions developed by its siblings in response to the manipulativeness of the situation. Having thus gathered strength and, apparently, worked up a righteous indignation (with a wild stretto of the

[22]In his score, Klebe does not specify which untuned percussive instruments he wishes to be used. For the idiosyncratic juxtaposition of piano, xylophone, and two percussion instruments see mm. 30-46, 54-87 (with the drummer "going mad" in mm. 73-87), and, accompanied, mm. 90-92 and 100-101, where the four percussive instruments quote (and thus ironicize) the refrain material presented by the strings in the first section of the composition.

full array of possible reactions developed by its siblings in response to the manipulativeness of the situation. Having thus gathered strength and, apparently, worked up a righteous indignation (with a wild stretto of the initial motif and frequently renewed exclamation-mark strokes in *sff*), this bird converts assertiveness into raw aggression. The music concludes in an unambiguous percussive fury, as if hurling arrows into any man-made clouds that may dare to darken the skies of avian freedom.

Summary: Three Ways of Listening to Birds Hooked to a Crank

As the brief descriptions of the sister compositions by Peter Maxwell Davies, Gunther Schuller, and Giselher Klebe show, the three composers differ substantially in their approach to the painting and thus appear as ideal representatives of the various ways in which Klee's miniature may be interpreted. Davies sees a satire in which the birds never give up their efforts to outsmart the machine. True, they are bound into a wheeling motion of ever faster rotation. But as this composer is convinced, nothing, not even this attempt at mechanization, will be able ultimately to stifle their expressive freedom. Instead, as the tempo increases, an ever greater number of birds takes part in the joyous ride, contributing ever-varied flourishes or syncopated variations of their respective calls. By contrast, Schuller's movement strikes me as a brilliant piece of musically couched cultural criticism. A completely mechanized set of avian squeaks is subjected to a series of transformations that only the human obsession with abstraction could invent. The musical picture is one of detached heads on wires, jerked this way and that, with a result that is as mesmerizing as so many of the high-tech contrivances characteristic of our time can be. But the birds' voices are no longer their own, as becomes sadly obvious when they go "out of tune" with the slowing down of the mechanism. Klebe, finally, does not seem to focus on the idea behind the painting and the question who comes out victorious, birds or human machinery. Instead, he translates the structure and concrete components, the four individualized characters as he finds them depicted so charmingly by Klee.