

PART 2



Kurenniemi's original tapes with their scarce markings.

Photo: Kai Lassfolk

The Electronic Music of Erkki Kurenniemi

Kai Lassfolk

Introduction

Erkki Kurenniemi's most active involvement in music dates from the early 1960s to mid-1970s. During that period, he made a large number of musical recordings, including various types of

electronic music compositions, film music and sound effects, material tapes intended for other composers and instrument test tapes. Some of Kurenniemi's tapes have been lost, including the work *Slice* (s.a.). Other pieces of music may still lie hidden in his tape archive. He continued to make music even after the mid-1970s, although far less intensively.

As mentioned in Mika Taanila's liner notes on the CD *Äänityksiä / Recordings* (2002), Kurenniemi regarded his music as "mere equipment tests" and considered himself an instrument maker rather than a composer. Hence, one might assume that his music holds primarily technological and, from today's perspective, historic value. However, the vast recent interest in his music, demonstrated by several new record releases, cannot be explained by technological intrigue alone. It shows that Kurenniemi's music does possess genuine artistic value. Part of the value – and charm – of his music arises from the interaction between man and technology, and that technology directs towards, or at least presents a possibility for, a certain kind of musical expression. This brings out analogies with the way music is made today. Being a maker of electronic instruments, Kurenniemi was not a passive consumer of technology. In particular, his interest in digital electronics affected his music in ways that anticipated modern digitally produced music, especially electronic popular music.

Ojanen and Lassfolk (2012) point out that most of Kurenniemi's recordings lack any form of documentation or even proper markings on the master tapes apart from tape speed, the name of the piece or tape and a numeric ID code, the key to which perhaps remains to be discovered in his archive. This imposes considerable challenges for research. The aim of this article is not to find definitive answers to the question of which specific pieces of equipment were used to create the recordings, and not even in which studio the pieces were completed. Some remarks are nevertheless made based on secondary sources (written documents or interview statements) or the analysis of the sound material.

Kurenniemi's music has already been discussed in several texts both in Finnish and English. Kalev Tiits (1990a; 1990b) presented an overview of Kurenniemi's work at the University studio and an analysis of selected musical works. Important ground research was done by Jukka Ruohomäki in the 1990s. His manuscript on the history of Finnish electronic music is still unpublished, but he has kindly provided his work to be used as reference material by other researchers. Kuljuntausta's massive books on the early years of Finnish electronic music both in Finnish (2002) and English (2008) discuss Kurenniemi's work extensively. A previous article of mine presents an analysis of the sonic characteristics of Kurenniemi's music (Lassfolk 2012). Ojanen and Lassfolk (2012) discuss the relationship between

Kurenniemi's musical recording and his instruments and the concept of "a musical work". The focus of this article is on Kurenniemi's musical style and how his technological activities and orientation is reflected in his music.

Kurenniemi's music has been published both on CD, vinyl record and C cassette. Most publications date from this century, which shows an increasing interest in his music. Two compilation albums, the CD *Äänityksiä / Recordings 1963–1973*, edited by Mika Taanila (2002), and the double vinyl *Rules*, edited by Mikko Ojanen (2012), present a comprehensive collection of both his "official" compositions and recordings which were originally less formal and have, through the record releases, become treated as musical works.

Kurenniemi's music can be roughly divided to synthetic works, instrument tests and demonstrations, and tape collages. The boundaries of these categories are vague. For example, synthesized sounds are used in his tape collages. Conversely, acoustic sound material appears commonly in his primarily synthetic works. Even his instrument test tapes are not purely technical demonstrations without musical thought or form. This text does not aim to cover all of Kurenniemi's musical output. The time frame ranges from 1963 to 1975, which covers his most productive period in music making, but not all pieces from this period are described. The work *On-Off*, although already

discussed in several texts, cannot be left out from an article that attempts to describe Kurenniemi's musical style. Other works discussed below were selected from published recordings, especially the *Äänityksiä* and *Rules* albums.

On-Off

From 1963 to the mid-1970s, Kurenniemi made most of his music at the Department of Musicology, University of Helsinki, but he also worked occasionally in temporary electronic music setups of the Finnish Broadcasting Company, YLE. For example, Saharan uni was prepared at the recording studio of Kulttuuritalo in Helsinki (Helsinki Hall of Culture).

On-Off (1963) was the first musical work made in the newly built studio at the Department of Musicology, University of Helsinki. The history and technology of the studio is described in Mikko Ojanen's article in this publication. *On-Off* is also one of Kurenniemi's best-known compositions. It has been released on two CD's as well as on the *Rules* double vinyl album. *On-Off* is also heard on an early scene of Mika Taanila's documentary film *The Future Is Not What It Used To Be* (*Tulevaisuus ei ole entisensä* 2002) as the soundtrack of Kurenniemi's experimental silent film *Winterreise* (1963). The name *On-Off* itself was adopted by Petri Kuljuntausta as the title of his book on Finnish electronic music. Kuljuntausta also describes the contemporary reactions to the

early concert performances of the piece (Kuljuntausta 2002, 389–391).

There are significant differences between the published versions of *On-Off*. The version published on both the supplement CD of Kuljuntausta's book *On/Off* and on the *Äänityksiä / Recordings 1963–1973* CD has very little dynamic variation during its entire 13-minute span. The *Rules* album release, however, digitized directly from the original master tape and released with minimal post-processing, has not only much wider dynamic alteration but also significantly different overall sound.

The 13-minute piece is an intensive wall of noise and distortion. According to several sources, including Tiits (1990a, 48) and Kuljuntausta (2002, 389), Kurenniemi got the inspiration for the piece from the noise of a power plant generator hall. The actual sound source of the piece has been debated (see Ojanen and Lassfolk 2012). What is generally accepted and in coherence with Kurenniemi's working style in general is that the piece was completed as a real-time performance in the studio. In a later interview, Kurenniemi mentioned a spring reverb unit, tape echo and manual tape stretching as the primary means of sound processing (Ruohomäki s.a.). The electronically overdriven and mechanically excited spring reverb device is indeed a central sonic element. This treatment causes the reverb springs to

vibrate at their natural resonant frequency, yielding a distinctive “splashy” metallic sound.

The piece opens with a distorted guitar-riff-like sound gesture and quickly develops into a massive but dynamically varying noise texture, which is constantly overlaid by equally intensive, even aggressive sound gestures, many of which clearly originated from the spring reverb. Even after *On-Off*, the spring reverb remained part of Kurenniemi’s signature sound, although in a more subtle and conventional role. Other gestures include metallic-sounding noise bursts and synthetic-like glissandos.

With its massive wall of noise and distortion, *On-Off* can be regarded as an early representative of noise music. However, noise and distortion were not novel effects even at the time of its completion. Distortion had been used by electric guitarists – either on purpose or out of necessity – from the days of Charlie Christian in the late 1930s. In electronic music, Karlheinz Stockhausen used an old Telefunken V 41 preamplifier as a distortion unit on the tape part of his 1960 work *Kontakte* (Stockhausen 2008, 2). Noise, in turn, had been a fundamental element of both German elektronische Musik since the 1950s and French musique concrète since the 1940s. A characteristic feature in Kurenniemi’s piece was that he pushed the technology to its limits by heavily overloading the signal path and even physically banging the equipment. One could imagine that the

real-time realization of the piece resembled the concert performances of Jimi Hendrix or The Who of the mid-to-late 1960s (perhaps without the theatrical aspect) more than the meticulous mixing and tape editing processes of Stockhausen in the Cologne studio. Indeed, Kurenniemi later said that *On-Off* was created partly as a protest or rebellion against academic electronic music (Ojanen and Lassfolk 2012; Ruohomäki s.a.). Indeed, its sonic and musical expression have more in common with later popular music genres, such as noise, or even heavy metal, than with the early 1960s electronic music.

Even though *On-Off* may be the best-known of Kurenniemi's musical works, and even a visionary one in some respects, it gives a narrow view of his musical thinking in general. The piece can rather be thought of as a prelude to even more visionary endeavors. In fact, the binary connotations of the title were an implication of Kurenniemi's interest in digital electronics, which characterized almost all of his musical activity from that point on.

Film Music and Instrument Test Tapes

Kurenniemi collaborated with composer Henrik Otto Donner in many projects, one of which was the sound track for Eino Ruutsalo's experimental short film *Hyppy* (Jump, 1964). Although the sound track was credited to both Donner and Kurenniemi,

the sound material was created solely by Kurenniemi (Ojanen and Lassfolk 2012) with his new sound generator, which later gained the name Integrated Synthesizer (see Ojanen et al. 2007; Suominen 2013).

The original sound material tape was released on the Rules album as Music for the Film *Hyppy* (1964, 6'38"). The tape consists of consecutive repetitive sequences of varying lengths and tempos, generated in real time with the programmable synthesizer. The main musical theme of the film, an intensive up-tempo sequence, appears at ca. 3'47" to 5'25". This is followed by another similar up-tempo passage. For present-day listeners, it is easy to associate the sequences with the hypnotic rhythm patterns of the 1970s and 1980s synthesizer pop, or perhaps even more closely with modern techno.

While the *Hyppy* tape was created as material for a film soundtrack, it can also be grouped together with Kurenniemi's instrument test tapes *Antropoidien tanssi* (1968) and *Improvisaatio* (1969). Although the pieces were made with different instruments (*Hyppy* with the Integrated Synthesizer, *Antropoidien tanssi* with Andromatic, and *Improvisaatio* with Dico), they are similar in their musical style and expression, especially the use of repetition.

Antropoidien tanssi (The Dance of Antropoids) was one of the few of Kurenniemi's compositions which were released on record during his active music making period. It was first published on the Perspectives '68 – Music in Finland (1968, Love Records LRLP 4; Ojanen and Lassfolk 2012, 5; *Tulevaisuus ei ole entisensä* 2002). Sometime after, part of the piece was released as *Dance of the Anthropoids* on the album *Tombstone Valentine* (1970, Love Records LRLP 19) of the Finnish progressive rock group Wigwam. As a consequence, it is also one of Kurenniemi's best-known musical pieces.

The piece can be divided into three passages (Ojanen and Lassfolk 2012, 5–6). The first passage starts with a constant up-tempo beat. A pounding on-beat bass-drum-like sound evokes associations with modern techno music. The beat continues for 40 seconds and is followed by a variation section with breaks and wild tempo changes. At ca. 1' begins a new sequence, this time a slow-tempo polyrhythmic "waltz". Towards the end of the piece, the waltz becomes more up-tempo and finally develops into a metrically irregular ending section with synthetic sound gestures augmenting the repetitive base sequence. Even though *Antropoidien tanssi* is an instrument test, it is not a purely improvised real-time performance. This is indicated both by the sharp changes in the spectrogram of the piece caused by obvious tape edits and the sudden appearance of a recorded human voice in between the last two passages of the piece

(ibid.). The passages themselves, however, show a similar spontaneous and improvisational touch as *On-Off* or the later *Improvisaatio*.

Improvisaatio (Improvisation) is, as the name suggests, a real-time performance with the Dico synthesizer recorded in a demonstration session at the Finnish Broadcasting Company. The piece was released on the *Äänityksiä* CD and thus gained the status of a musical work (see Ojanen and Lassfolk 2012). The recording is monophonic despite the two-channel output capability of the instrument. This was probably due to the recording equipment available at the time and the fact that all radio and TV broadcasting in Finland was still monophonic. Even though *Improvisaatio* is an instrument demonstration, it can be listened to as a purely musical performance. The piece begins with a static repeating sequence demonstrating the 12-step programmable memory of the instrument. The sequence is altered “on-the-fly”, as Kurenniemi changes the Dico digital parameter values, literally bit by bit. The general musical form is similar to that of *Antropoidien tanssi*: a repetitive introduction sequence, a break, followed by an alternate sequence, and finally a “development” or “jam” section with tempo speedup that results in an intensive climax.

The test and demonstration tapes made with the DIMI-A synthesizer are more complex and carefully prepared than those

made with the earlier instruments. This applies especially to *Inventio-Outventio*, prepared in collaboration with Jukka Ruohomäki, and originally released on the A side of a vinyl single DIMI is born as part of the marketing efforts for the synthesizer. DIMI-A allowed more elaborate programming, which was demonstrated by the two-part work based on Johan Sebastian Bach's *Invention 13* in A minor, BWV 784.

The first part, *Inventio* is an arrangement of Bach's two-voice piece for DIMI-A. The piece was programmed to DIMI-A's memory in parts. Each part was recorded to analog tape and the parts were joined by tape editing. However, Bach's score was not followed to the letter. The first deviation is a missing note – intentional or not – which disrupts the piece's metric structure. Towards the end, exaggerated tempo changes (a typical Kurenniemi gesture) and heavy vibrato further disturb the typical constant pulse of Bach's music. The two-voice piece was very well suited for demonstrating the programmability of the equally two-voice instrument. Furthermore, its two-channel signal output is demonstrated by dividing the voices to individual outputs and assigning them to the left and right stereo channels, respectively.

Outventio, the second part of the piece is a complete departure from Bach's score even though a Bach-like metric 4:4 1/16th note pulse does reappear on a couple of occasions. The piece is,

however, mostly non-metric. The general atmosphere is wild and playful. A heavily modulated human-voice-like sound appears occasionally as a demonstration of the instrument's ability to process external audio signals.

DIMI-A did not lend itself to spontaneous improvisation as easily as its predecessors. Even the tempo changes in *Inventio-Outventio* appear to be preprogrammed as they progress in steps rather than continuously (for more on the usability of DIMI-A, see Ojanen et al. 2007, 63).

Synthetic and Quasi-Synthetic Tape Works

Saharan uni, *Hana* and *?Death* are among Kurenniemi's more musically ambitious works. According to their sonic content, they can be classified as either synthetic or quasi-synthetic. Here, the term quasi-synthetic refers to a sonic result which sounds synthetic, but the actual sound source is unidentifiable and may be either acoustic or electronic. In synthetic music the sound source can be clearly identified from the sound material, or it may be verified from an external source.

Saharan uni (1967), prepared in collaboration with sound engineer Kari Hakala, is one of Kurenniemi's most refined works. Kurenniemi and Hakala made several versions of the piece, the best known being *Saharan uni I*. *Saharan uni* contains

Kurenniemi's typical musical gestures, including ostinato passages and glissandi. Most of the sound material is probably generated with the Integrated Synthesizer, recorded and mixed with a 4-track tape machine. Sonically, however, the piece differs from most of Kurenniemi's other works, especially the strongly reverberated *Saharan uni I*. The obvious use of the recording studio's smooth-sounding reverb unit distinguishes the overall sound from the typical spring reverb "splash" in many of Kurenniemi's other recordings. Moreover, the general mood is uncharacteristically calm and melodic. *Shararan uni II* is mixed more sparsely, and reverberation is used more sparingly. The tape splices in the master tape of *Saharan uni I* indicate that the two pieces are not just different mixes of the same multitrack tape but distinct versions.

One could speculate whether or not the Kulttuuritalo's broadcasting quality equipment directed not only sonic but also musical expression toward a smooth and "sophisticated" direction. Both versions of *Saharan uni* show premeditated musical expression and use of technology. The Integrated Synthesizer is treated with tape echo, reverberation and filtering, and sounds considerably smoother than in *Hyppy*. Repetitive sequences, however, reveal the obvious primary sound source of the piece.

In *Hana*, the sound source is even more obscure. The two main sonic elements of the piece are a relatively static drone sound and a set of sound gestures probably generated by magnetic tape stretching and tape echo. Both *Saharan uni* and *Hana* form a balanced musical arc without, for example, impulsive tempo speedups. An interesting common gesture is the sound of manipulated human speech at the very end of both pieces.

?Death (1972–1975) is a tape music piece of mostly synthetic material. Kurenniemi made three versions of the piece, each shorter than the previous one. The last and shortest version, *?Death 3*, was released on the *Rules* album. *?Death 3* starts as a playful dialogue between two synthetic sound signals divided to the left and right channels, respectively. The interplay is interrupted with excerpts from human voice narration in French and Finnish. Finally, *?Death* develops into a mixture of different sounds ending in a tonal cadenza.

At the time of the realization of *?Death*, Kurenniemi's studio was equipped with high-quality two-track tape recorders and a VCS-3 synthesizer in addition to his own instruments. As a consequence, the piece presents a multitude of sound sources, including conventional analog-like sound synthesis (probably VCS-3), organ-like sounds (probably DIMI-O) and Kurenniemi's typical iterative passages (probably DIMI-A), although this time in relatively short sections. The piece is also edited more

elaborately than his instrument test tapes. *Death 3* is one of Kurenniemi's more ambitious works, reminiscent of Saharan Uni in many regards (this is perhaps also indicated by the number of its versions).

Preludi (1970) is another synthetic work with a typical two-layer sonic structure. There, a static synthesizer ostinato is layered with a sound generator signal with a slowly varying pitch. A synthesized repetitive sequence is one of Kurenniemi's musical trademarks. In *Preludi*, the slow movement of the sound generator gives the sequence an emphasized role.

Tape Collages

Virsi (1970) and *Mix Master Universe* (1973) represent Kurenniemi's use of the tape collage technique. Both pieces contain both synthetic and acoustic sound material. Both unprocessed and processed sound materials are used, tape speedup being the primary means of processing.

Virsi consists of more than 20 sound clips of human speech, recorded music, television sounds and synthesized sounds. The length of the clips ranges from less than a second to ca. 2,5 minutes. Clips are joined consecutively without obvious crossfades. Although the piece is recorded in stereo, nearly all of the clips are monophonic.

Mix Master Universe was created collaboratively by Kurenniemi and Jukka Ruohomäki. As in *Virsi*, part of the sound material was gathered from the tape library of the Department of Musicology. The splicing technique is more elaborate and less abrupt between clips. The piece also contains long passages of synthetic sound material, most of which were probably made specifically for the piece. Three numbered versions of the piece were prepared by editing the same sound material. *Mix Master 2* was released on the *Äänityksiä* CD and *Virsi* on *Rules*.

Kurenniemi's Musical Style

Kurenniemi's musical style is an interesting mixture of impulsiveness and systematic development. The impulsive aspect is explicitly presented in his individual recordings through tempo speedups, sudden interruptions and a general improvisational or ad hoc style of musical decision making. On the other hand, he systematically applies his technological skills first in the form of musical repetition and later through more advanced musical programming.

Other typical features can also be pointed out. Many of his pieces are based on the contrast or dialogue between two sonic elements: in *On-Off*, the static background hum and the overlaying gestures, and in *Preludi*, the synthesizer ostinato and

the slowly moving oscillator sound. In both *Outventio* and *Death*, the dialogue is between two synthesizer voices which are divided to the left and right stereo channels.

Repetition or ostinato is one of the most distinctive individual features of Kurenniemi's style. Instead of tape loops typical to electronic music, Kurenniemi favored programmable digital logic and iteration, a technique also known as sequencing in modern music production terminology. Kurenniemi's early musical instruments were simple enough to be programmed in real time, making it possible to make changes to the sequence on the fly. Ostinato sequences appear in nearly all of his synthetic recordings, including *Hyppy*, *Saharan uni*, *Antropoidien tanssi*, *Preludi*, *Outventio*, and *Mix Master Universe*. However, *Inventio-Outventio* also demonstrates more complex musical programming.

Improvisaatio is a particularly good example of sequencing on the fly – to which the one-voice Dico synthesizer lent itself particularly well. On the other hand, the piece also shows the impulsive side of Kurenniemi. He pushes the tempo up to its limits until the subsequent notes of the one-voice instrument merge into a distorted harmony. Even in his instrument test and demonstration tapes, Kurenniemi did not restrict himself to a “proper” or “tidy” way of using the equipment. His playfulness is present even in the Bach arrangement of *Inventio*.

It is difficult to place Kurenniemi in any specific musical genre. As a composer, he did not belong to any of the major schools of electro-acoustic music. Despite his interest in mathematics and later research in harmonies and tuning systems, he did not systematically apply the serial composition method of the Cologne school of elektronische Musik. Indeed, even when using acoustic sound material in his tape collages, he did not strive towards the abstracted *objet sonore* concept of the Paris school of Musique concrète (see also Tiits 1990b, 49). Instead, Kurenniemi used the various technological means and sonic elements independently of both the traditional academic compositional conventions and the avant-garde schools.

In terms of musical expression, Kurenniemi is perhaps closer to some of the Milan R.A.I. studio composers. Luciano Berio's electro-acoustic work *Visage* (1961) in particular shares the intensive flow and drive towards a tensional climax with many of Kurenniemi's pieces, including *On-Off*, *Improvisaatio* and *Antropoidien tanssi*. However, these analogies are likely coincidental, and there are more dissimilarities than similarities in the style of the two composers. Better points of comparison could be found among the composers of the San Francisco Tape Music Center (see Bernstein 2008), such as the early tape music works of Pauline Oliveros. As with Kurenniemi, her use of the

studio as an instrument led, intentionally or not, towards a somewhat similar intensive improvisational approach.

Kurenniemi could perhaps be best compared with other technologically-oriented music makers and studio builders such as Louis and Bebe Barron or Raymond Scott in the US, or Daphne Oram or Peter Zinovieff in the UK. However, Kurenniemi did much of his work within an academic institution which provided some, albeit comparatively modest, financial backing for the studio facility.

A Musical Visionary

Erkki Kurenniemi has rightfully been called a visionary (see e.g. Huhtamo 2003). In the field of music, he is best recognized as a pioneer of digital technology. Since his ambitions lay more in electronics design than in musical composition, and considering the casual manner of his music making, it would seem rather daring to call him also a musical visionary.

However, Kurenniemi's statement in Aki Oura's documentary film *Kahdeksan tahtia tietokoneelle* (*Eight Bars for the Computer*) shows that he was quite conscious of how computers were going to change the way music would be made in times to come:

I would think that the clearest distinctive feature that this kind of computer music will have is that compositions will lose their individuality. Maybe this kind of future computer composer can be compared to an industrial designer, or better yet, a fashion designer.

*(Kahdeksan tahtia tietokoneelle, 1967; The excerpt is also shown in Taanila's film *The Future Is Not What It Used To Be*, 2002)*

Here, Kurenniemi is referring to a computer program by researcher Markku Nurminen, which was made to generate Finnish tangos in the style of Toivo Kärki. However, while talking, Kurenniemi simultaneously played his Integrated Synthesizer in his typical casual and humoristic manner, thus emphasizing his words with an example of live musical programming.

This text has discussed some similarities between Kurenniemi's recordings and modern music making. In addition to techno, sonic and stylistic resemblances to video game music might also be pointed out as well as modern electronic experimental music. One could argue that these features are only superficial, or that the similarities, however obvious, are the result of pure chance. On the other hand, Kurenniemi was able to use similar technology to modern day music makers – which he developed quite consciously and systematically. Given his spontaneous way

of working, it is not surprising that he used his equipment in a similar manner to many modern day musicians.

In addition to the above similarities or indirect influences, one might also ask to which extent Kurenniemi has been a direct influence for modern music makers. This is a relevant question at least in the scope of the Finnish electronic music scene. After all, many of the active Kurenniemi researchers, such as Kuljuntausta, Ojanen and Suominen, are also performing musicians. Furthermore, Kurenniemi's return to music as a live performer in the early 2000s made the link with the younger generation of music makers even more evident.



Erkki Kurenniemi visits the University studio in 2002.

Photo: Kai Lassfolk

References

Unpublished references

Ruohomäki, Jukka [s.a.]. Unpublished manuscript of the history of the electronic music in Finland. (PDF copy of the manuscript in the author's personal archives.)

Published references

Bernstein, David (ed.) 2008: *The San Francisco Tape Music Center: 1960s counterculture and the avant-garde*. Berkeley: University of California Press.

Huhtamo, Erkki 2003. *Kurenniemi, or the Life and Times of a Techno-Visionary*. Publications of Documenta (13), Kassel 2012. <http://www3.documenta.de/research/assets/Uploads/KurenniemiHuhtamo1.pdf>. (Accessed 30 May 2013.)

Kuljuntausta, Petri 2002. *On/Off – Eetteriäänistä sähkömusiikkiin*. Helsinki: Like.

Kuljuntausta, Petri 2008. *The First wave – A Microhistory of Early Finnish Electronic Music*. Helsinki: Like.

Lassfolk, Kai 2012. "Erkki Kurenniemen elektroakustisten sävellysten sointimaailma". In Pääkkölä, Anna-Elena (ed.) 2012. *Suomen musiikkitiede 100 vuotta – Juhlasymposiumin satoa*. Helsinki: Suomen musiikkitieteellinen seura ry., pp. 58–65.

Ojanen, Mikko 2013. Erkki Kurenniemi's electronic music studio. Article in this publication.

Ojanen, Mikko, Suominen Jari, Kallio Titti and Lassfolk Kai 2007. "Design Principles and User Interfaces of Erkki Kurenniemi's Electronic Musical Instruments of the 1960's and 1970's". In *Proceedings of the 2007 Conference on New Interfaces for Musical Expression (NIME07)*. New York. http://www.nime.org/proceedings/2007/nime2007_088.pdf.

Ojanen, Mikko and Lassfolk Kai 2012. "Material tape as a piece of art: case studies of an inconstant work-concept in Erkki Kurenniemi's Electroacoustic Music". Proceedings of the Electroacoustic Music Studies Network Conference Meaning and Meaningfulness in Electroacoustic Music, Stockholm, June 2012. http://www.ems-network.org/IMG/pdf EMS12_ojanen_lassfolk.pdf.

Suominen, Jari 2013. Erkki Kurenniemi's Electronic Music Instruments of the 1960s and 1970s. Article in this publication.

Stockhausen, Karlheinz 2008. *Kontakte for electronic sounds piano and percussion – Realisation score*. Kürten: Stockhausen-Verlag.

Tiits, Kalev 1990a. *Voluntääriassistentti Erkki Kurenniemi ja elektronimusiikin alku yliopistolla*. Master's thesis. University of Helsinki, Musicology.

Tiits, Kalev 1990b. "Erkki Kurenniemi – avant-garden innovaattori". *Musiikkitiede* 2/1990, pp. 37–60.

Recordings

Taanila, Mika (ed.) 2002. *Äänityksiä / Recordings 1963–1973*, Compact Disc. Love Records LXCD 637, 2002.

Ojanen, Mikko (ed.) 2012. *Rules*. Full Contact Records / Elektro krypt-022.

Films

Tulevaisuus ei ole entisensä / Future Is Not What It Used To Be 2002. Script by Mika Taanila. Directed by Mika Taanila. Kinotar. 0'52".

Kahdeksan tahtia tietokoneelle 1967. Script Ilkka Hannula. Directed by Aki Oura. YLE. 0'19".