



On the difficulty to consider as a continuity the production of the NHK electronic music studio

Jeremy Corral

► To cite this version:

Jeremy Corral. On the difficulty to consider as a continuity the production of the NHK electronic music studio. 2018. hal-01686970

HAL Id: hal-01686970

<https://hal.science/hal-01686970>

Submitted on 18 Jan 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Jeremy Corral

On the difficulty to consider as a continuity the production of the NHK electronic music studio

INALCO (CEJ)

jicor73@hotmail.com

Abstract

It is known that production at the NHK electronic music studio does not exhibit any theoretical or formal unity obvious enough that we could easily resort to synchronous methods of analysis with a systematic nature, which would allow its essentialization: numerous composers worked there, none of whom stood out – or rather sought to stand out – as the figurehead around which to establish a common direction and precise features. Therefore the play of opposites used to describe production of *musique concrète* at Club d'essai / GRMC in France and the electronic music of NWDR in Germany cannot be applied to grasp what is created at the NHK as well – or in a more limited fashion. Beyond an analysis of the aesthetics of the pieces which we could constitute – to put it simply – around specific technological, technical and stylistic characteristics, it thus appears necessary to highlight the shared particularities from the cultural context and the work environment in which they were being produced; in other words, the idea would be to extract the core properties on which depend all the ones previously mentioned.

To allow that, the development of a diachronic history of the studio's operation is an obvious tool to consider. Indeed, if the studio is where all the repertoire was created it seems natural that it would *de facto* represent – with high certainty for the researcher – a structural setting, a persistence of stable landmarks, encompassing and levelling the music pieces through the action of agents that we can believe to be irreducible. Yet, some archives tend to show that it cannot be considered self-evident. The purpose of this communication is to underline with a few examples backed by references how it is proving challenging to apprehend the production of the studio in terms of continuity.

Is the NHK electronic music studio really a persistent structural setting?

It is known that the production at the NHK electronic music studio does not exhibit any theoretical or formal unity obvious enough that we could easily resort to synchronous methods of analysis with a systematic nature. Numerous composers worked there, none of whom stood out, or rather sought to stand out, as the figurehead around which to establish a common direction and precise features. As a consequence, speaking strictly of the structure and forms of the musical pieces, the play of opposites used to describe the production of *musique concrète* in France and electronic music in Germany cannot be applied to grasp what is created at the NHK. Beyond an analysis of the aesthetics of the pieces, it thus appears necessary to highlight the shared particularities from the cultural context and the work environment in which they were being produced. In other words, the idea would be to extract the core properties of what can be seen as a proper NHK studio aesthetics.

To allow that, the development of a diachronic history of the NHK studio's operation is an obvious tool to consider. Indeed, if the studio is where all the repertoire was created, it seems natural that it would actually represent a structural setting, a persistence of stable landmarks, encompassing and levelling the music pieces through the action of agents that we can believe to be irreducible. Yet, some archives tend to show that it cannot be considered self-evident. The purpose of this communication is to underline with a few examples backed by references how challenging a task it is to apprehend the NHK electronic music studio and its production in terms of continuity.

Speaking of the NHK electronic music studio, which structure, in space and time, are we referring to?

First of all, the most essential question is to ask ourselves what we really mean by the NHK electronic music studio: that is, which structure, in space and time, are we referring to. Was the studio created in 1954, when the composer Moroi Makoto 諸井誠 (1930-2013), the first at that time to have written extensively about Cologne electronic music and its principles, joined a team of NHK technicians to perform sound experiments? Or was it in 1955 to support the conception, by Mayuzumi Toshirō 黛敏郎 (1953-1997), of the first electronic music studies based on the analysis of texts from Robert Beyer (1901-1989) and Herbert Eimert (1897-1972)? Or even in 1956 with the creation, by Moroi and Mayuzumi, of the first original piece titled *Shichi no variēshon* (七のヴァリエーション Variations on the musical principle of seven)? Would it be possible that what is known today as the electronic music studio was a construct posterior to 1956? In fact, it turns out that all those possibilities are at the same time correct and insufficient.

The first person to write publicly about the existence of a studio seems to be the composer Moroi Makoto, in the journal *Ongaku geijutsu* (音楽藝術 Art of music) in August 1957, that is to say nine months after the broadcasting of the piece *Shichi no variēshon*, and almost two years after the broadcasting of the three studies of electronic music made by Mayuzumi. In this text, Moroi states:

The first [work] has been made by Mayuzumi Toshirō while, in 1955, I was traveling in Europe and visiting the Cologne studio, but at that time the preparation was not sufficient enough, and since that was the first [electronic music] experience for the composer as well as for the technicians, that was like groping in the dark. However for this occasion, a studio although little intended for electronic music has been established in the NHK buildings in Tōkyō: a crowded place where numerous devices and tools have been brought along, with which we managed to work until we arranged it in a quite decent kind of studio [...]¹.

最初のもは一九五五年に私が渡欧して、ケルンのスタジオを見学している間に黛敏郎君によって試作されたのだが、この時は設備も不十分であつたし、又作曲者も技師も最初の経験であつたのでまだ暗中模索の観があつた。しかしこれをきっかけに、小さいながらも電子音楽専用スタジオがNHK新館（東京）内に設置され、所狭しといろいろの機械や設置がここにもちこまれて、[...]私達が仕事を再開したときにはまずまずスタジオの体裁をととのえるところまでこぎつけていた。

¹ Makoto Moroi (諸井誠), "Denshi ongaku – '7 no variēshon' o chūshin ni" (電子音楽 "7のヴァリエーション"を中心に Electronic Music – With a focus on *Shichi no variēshon*), *Ongaku geijutsu* (音楽藝術 Art of music), 15(8), 1957, p. 94.

The information makes obvious the existence of a studio, since Moroi uses the word several times. But referring to the NHK almanacs of the time, which offer an extensive compilation of the institution activities in various domains, we cannot find any mention of the studio. In the 1957 edition of the almanac, is evoked the first broadcast of electronic music, that is to say the studies Mayuzumi made, illustrated with a photography of the composing team. The text attached to it states that the experiments realized at the NHK pursue the objective to create in depth aural environments for the radio programs, as well as a new and original music that would borrow the qualities of both the German electronic music and the American tape music, but synthesized in an original manner². Aside from this, nothing indicates in the text that the setup of a studio dedicated to electronic music would allow this task to be pursued.

In fact, the real nature of the studio in the 1950s seems to remain quite abstruse until the composer Shibata Minao (柴田南雄) (1916-1996), in the autobiographical book *Waga ongaku – Waga jinsei* (わが音楽 わが人生 My music – My Life) published in 1995, broached the topic in these terms:

[In 1955] the NHK electronic music studio didn't exist yet. According to the list of the electronic works made at the NHK elaborated by the producer Uenami Wataru [(上浪渡) (1925-2003)], the staff members created for the first time in 1954 *Experimental music*, then one year later Mayuzumi composed three musical movements [...]; at this time on the ground floor [of the building] three studios, numbered four, five, six, were aligned: the temporary electronic music studio actually was one of the broadcast operating rooms located in a corner of this corridor. At the last stage of his work, the situation was such that Mayuzumi used to work in the corridor with the tape recorders passing through the threshold.

[...] [In 1956] finally, in the depths of the NHK premises in the area of Uchisaiwaichō, at the extreme bottom of the newly made NHK Symphony Hall localized in the secondary building [...], there was an overhanging room from which it was possible to see the hall through a large window: here was another form of the temporary electronic music studio [...]³.

この時点ではNHKの電子音楽スタジオはまだ存在していない。NHKにおける電子音楽の制作は、ディレクターの上浪渡さん作成のリストによると、まず一九五四（昭和二十九）年にスタジオのメンバーが《エクスペリメンタル・ミュージック》を制作、その翌年に黛さんが [...] 三楽章の音楽を作ったが、当時は一階の第四、五、六と三つスタジオが並んでいる、その廊下の角のスタジオの副調整室が臨時の電子音楽スタジオだった。最終段階では、黛さんは廊下にまではみ出したテレコで仕事をしていた。

[...] やがて内幸町の本館の裏、第二新館に「NHKシンフォニー・ホール」というのが出来て、[...] その客席の最後部の奥に、大きなガラス窓からホールが見下ろせる部屋があり、そこが臨時の電子音楽スタジオだった時代があ[る][...]。

Based on this testimony, we can think that what was perceived as a studio by Moroi Makoto was actually no more than successive borrowed places not specifically designed for the creation of electronic music; in other words, one can hardly say that the proper conditions to successfully create the pieces in time continuity were gathered. Of course, it is easy to imagine that the NHK premises could not materially afford the sudden need of a dedicated space before fully understanding the real possibilities of a proper electronic music studio. Like Shibata Minao said, and whatever could have been the expectations for the future of

² “Denshi ongaku no hōsō” (電子音楽の放送 Electronic Music Broadcasting), in *NHK nenkan 9 – 1957 – Nihon hōsō kyōkai hen* (NHK年鑑9 1957 日本放送協会編 NHK Almanac 9 – 1957 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 1999 [1st ed. 1957], pp. 30-33.

³ Minao Shibata (柴田南雄), *Waga ongaku – Waga jinsei* (わが音楽 わが人生 My music – My life), Tōkyō, Iwanami shoten, 1995, pp. 274-275.

electronic music from the NHK management and the composers, the pieces made at that time were in a way considered as no more than "experimental", and, we can probably add, made in the hurry to embrace and constitute the musical modernity. So much that despite the making of several other works in the so-called electronic music studio, no significant mention about them appear in the next NHK almanacs, until 1961.

On that year, a short section of the chapter concerning the development of the technical work at the radio station is related to electronic music, and briefly displays the state of it since its beginning⁴. At this stage of the current research about the NHK electronic music studio, it is impossible to state with assurance why the management of the NHK chose to communicate once again about the electronic production of the institution that very year, after a long period of silence, but we can suppose that it is because the work *Ondīnu* (オンディーヌ Ondine), an opera composed by Miyoshi Akira (三善晃) (1933-2013) for the radio and which contains some electronic sounds besides instrumental music and chorus, won the First Prize of the national Art Festival in the Music section in 1959. Thereafter, the 1962 edition of the NHK almanac dedicates a space, in the section of the subjects of great interest of the year, to the big success of *Ondīnu* on a worldwide scale⁵: indeed, the piece obtained in 1960 the prestigious Prix Italia award, established by RAI, the national public broadcasting of Italy, which rewards the best radio and television broadcasts in the world. At this occasion the fine technical work of what is called the "NHK electronic music studio" was praised, for what seems to be the first time, in a text aimed at the general audience from the NHK management. Since this event, news about the NHK electronic music studio is regularly given in the NHK almanacs during the decade. However, in 1964, the information about the setup of a real electronic music studio in a room of 103 square meters in the main building can be particular evidence of the progressive importance and the consideration attached to electronic music⁶. The information go beyond the boundaries of the NHK almanac, and so we can see that some newspapers like the daily paper *Asahi shinbun* (朝日新聞 Asahi Journal) or the weekly one *Ongaku shinbun* (音楽新聞 Music Journal) write about the creation of the first electronic music studio in Japan. Thus, the 17th of May, *Ongaku shinbun* introduces the studio, and informs about its key role in the celebration of the 1964 edition of the Olympics held in Tōkyō, since it is assigned with creating the music of the opening ceremony, which is then to be made by Mayuzumi Toshirō. Besides, is mentioned the creation of a research group for electronic music, constituted by numerous composers, producers and technicians within the institution, which aim is to develop and rationalize the electronic music production⁷.

⁴ "Rajio gengyō gijutsu no shinten – Denshi ongaku" (ラジオ現業技術の進展 電子音楽 Evolution of the broadcast technical work – Electronic music), in *NHK nenkan 13 – 1961 – Nihon hōsō kyōkai hen* (NHK年鑑13 1961 日本放送協会編 NHK Almanac 13 – 1961 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1961], pp. 388-389.

⁵ "Shōwa 35 nendo no topikkusu – Itaria shō jushō" (昭和35年度のトピックス イタリア賞受賞 Subjects of great interest of the 35th year of Shōwa – The obtain of Prix Italia), in *NHK nenkan 14 – 1962 1 – Nihon hōsō kyōkai hen* (NHK年鑑14 1962 1 日本放送協会編 NHK Almanac 14 – 1962 1 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1962], pp. 35-36.

⁶ "Gengyō gijutsu – Denshi ongaku" (現業技術 電子音楽 Work technics – Electronic music), in *NHK nenkan 17 – 1964 – Nihon hōsō kyōkai hen* (NHK年鑑17 1964 日本放送協会編 NHK Almanac 17 – 1964 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1964], p. 193.

⁷ "Denshi ongaku shitsu' ga kansei – Gorin kai kaishiki ni riyō no denshi ongaku mo junbi – NHK" (「電子音楽室」が完成 五輪開会式に利用の電子音楽も準備 NHK Completion of an "electronic music laboratory" – And preparation of an electronic music piece used for the Olympics overture ceremony – NHK), *Ongaku shinbun* (音楽新聞 Music Journal), 1067, 1964, p. 7.

For the purpose of a new creative injection and a better, more convenient using of the devices and tools, the studio is completely removed and rebuilt in 1968, in the brand new NHK buildings located in the Shibuya area. We can assume that Karlheinz Stockhausen (1928-2007), who had been invited to compose in the NHK electronic music studio in 1966, played a crucial role in the reorganization of it, since he suggested many ways to improve the facilities use. In some way, here ends the first age of the NHK electronic music studio, an era that we can characterize by a certain creative dynamic led by a powerful desire to innovate despite the obvious lack of practicality of its premises. Without wanting to point out what can be the exact reasons of the development through the years of the NHK electronic music studio, we can see that this development seems to be dependent on the international reception of electronic music and on the role this has to play in the recognition of the national composers creativity and the sharp skills of the NHK engineers. As a result it is difficult to assert if the NHK electronic music studio was founded in 1954 or if it was founded in 1964 among other dates; what is sure however is that the studio in these times never had the pretension to be a completed frame of work, but a continuously improving tool of creation for a no less continuously shaped music.

Which pieces can be thought of as coming from the studio?

After having considered the physical entity of the studio both in space and time, it seems just as necessary to ask ourselves which musical pieces are really thought of as coming from the studio. Indeed, numerous pieces produced for radio serial broadcasts, special programs, or for specific institutional use have an uncertain status and do not appear in all the inventories made over the years. In addition, can we consider that pure musical works, entirely made by electronic means like *Shichi no variēshon*, are equivalent to narrative broadcasts that simply make use of electronic instrumental devices such as Ondes Martenot? As Kawasaki Kōji (川崎弘二) and Shimura Satoshi (志村哲) point out in a recent paper concerning an investigation into NHK electronic music production, the full story of the studio is still unknown⁸, that is to say that there is no official exhaustive narrative and list of works. The authors' approach is then to constitute a list as extensive as possible of the works containing electronic sounds or tape manipulations, whatever they are, made at the NHK; it is to say an archival approach. Another approach, no less interesting and crucial for the understanding of the creative and cultural dynamics of the NHK production at play through time, would be to consider the various speeches about this production in a chronological stance and to trace movements of thought and objects.

As an example, if we look at what seems to be the first list of musical works from the NHK electronic music studio established by NHK engineers in 1961 in the technical report journal *NHK gijutsu kenkyū* (NHK技術研究 NHK Technical Research)⁹, and the list made for *Ongaku geijutsu* in 1965, we can see that there is no mention of the piece *Rittai hōsō no tame no myujikku konkurēto* (立体放送のためのミュージック・コンクレート *Musique concrète* for

⁸ Kōji Kawasaki (川崎弘二), and Satoshi Shimura (志村哲), “NHK Tōkyō ni oite seisaku sareta denshi ongaku no chōsa (1952 kara 1968 nen)” (NHK東京において制作された電子音楽の調査 1952～1968 年 Survey of Electronic Music composed in Tōkyō NHK – Japan Broadcasting Corporation – 1952-1968), *Journal – Institute of Advanced Media Arts and Sciences*, 8, 2016, p. 122.

⁹ Tsukasa Takatsuji (高辻士), Hisashi Fujita (藤田尚), Yoshinori Andō (安藤由典), and Hiroshi Shiotani (塩谷宏), “Denshi ongaku” (電子音楽 *Musique électronique*), *NHK gijutsu kenkyū* (NHK技術研究 NHK Technical Research), 13(4), 1961, p. 348.

Stereophonic Broadcast) composed by Shibata Minao in 1955¹⁰. Though, nowadays, this piece appears in some lists, such as the one provided by Tanaka Yūji (田中雄二) in 2001 in his book *Denshi ongaku in Japan* (電子音楽 in Japan Electronic Music in Japan)¹¹. Besides, it seems that the first list to mention it as a NHK electronic music studio work is the one made for the *International Electronic Music Catalogue* compiled by Hugh Davies and published in 1968¹². To the question why the piece was not included in the first lists, we can reply that it is probably because, in fact, it has not been made in what we can consider to be the NHK electronic music studio.

Indeed, in his book *Waga ongaku – Waga jinsei*, Minao Shibata explains that while Mayuzumi Toshirō was working on his electronic studies in what is now known as the electronic music studio at the ground floor of the main NHK building, himself was working on the third floor of it, in a different studio that probably offered a broader stability and ease of work, and assisted by a different technical team¹³. Moreover, even though both works were designed to participate in the Art festival the same year, Shibata's piece had to be an accomplished piece to promote the technical proficiency of the stereophonic broadcast developed within NHK while Mayuzumi's electronic studies can be considered ambitious but as still experiment stage works. Thus, *Rittai hōsō no tame no myūjikkū konkurēto* is not a piece coming from what we can call the NHK electronic music studio, but for the sake of systematization and listing of NHK electroacoustic works, and moreover for the promotion of the local works on an international scale, it has been largely integrated to it. Basically, to incorporate or not *Rittai hōsō no tame no myūjikkū konkurēto* to the NHK electronic music studio works list is not an important matter of debate, but what we can see here is that the need to seize the NHK electronic musical production or to trace a story of the studio, as far as possible, have to be supplemented and put into perspective by viewing each piece individually.

The NHK electronic studio as an entity made of asperities and ruptures

Those few facts illustrate how delicate a task it is to restrict the production of the studio within known markers, as it cannot be said that all production from the NHK taking advantage of electronic technologies or the technical capabilities of the tape recorder automatically becomes a piece from the electronic music studio. It is all the more perilous considering the fact that there is no official archives of the studio, and that the only available resort for the researcher to treat the data is to rely on scattered documents and discographies. In this way, to achieve simplicity and clarity, it is not surprising that we would need to rely on a rational and quickly workable classification as made available by the inventory produced *a posteriori*. Although convenient and allowing us a direct entry into the repertoire under scrutiny, this could however not suffice to extract the potential characteristics of the aesthetic identity of the production of the NHK electronic music studio; nor can it help determine the

¹⁰ Kiyotatsu Miyoshi (三善清達), Wataru Uenami (上浪渡), Keimei Asami (浅見啓明), and Kōsuke Nakamura (中村洪介), "NHK denshi ongaku sutajio" (NHK電子音楽スタジオ NHK Electronic Music Studio), *Ongaku geijutsu* (音楽藝術 Art of Music), 23(8), 1965, pp. 54-59.

¹¹ Yūji Tanaka (田中雄二), *Denshi ongaku in Japan* (電子音楽 in Japan Electronic Music in Japan), Tōkyō, Aspect, 2001, p. 102.

¹² Hugh DAVIES (ed), *Répertoire international des musiques électroacoustiques / International Electronic Music Catalog – Electronic Music Review Nos. 2/3, April/July 1967*, Paris / New York, Le Groupe de Recherches Musicales de l'O.R.T.F. / The Independent Electronic Music Center, 1968, p. 128.

¹³ Minao Shibata, *op. cit.*, pp. 273-274.

stakes of its positioning within the international production. This is why a deep dive into the available texts should prevent us from considering the NHK electronic music studio as a continuous and smooth entity, but instead to reveal all his asperities and ruptures, on which it is important to insist for understanding the particular cultural and aesthetic dynamics in play. Finally, it is therefore about managing scatterings that a structuring element inherent to the NHK electronic music studio – an element which is not the so-called studio itself, but which rather lies in it – yet to be defined should attempt to minimise.

I express all my gratitude to Professor Shimura Satoshi and Professor Nakano Junko from Ōsaka University of Arts and the Canon Foundation in Europe for having made possible this research.

References

“Denshi ongaku no hōsō” (電子音楽の放送 Electronic Music Broadcasting), in *NHK nenkan 9 – 1957 – Nihon hōsō kyōkai hen* (NHK年鑑9 1957 日本放送協会編 NHK Almanac 9 – 1957 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 1999 [1st ed. 1957], pp. 30-33.

“Denshi ongaku shitsu’ ga kansei – Gorin kai kaishiki ni riyō no denshi ongaku mo junbi – NHK” (「電子音楽室」が完成 五輪開会式に利用の電子音楽も準備 NHK Completion of an “electronic music laboratory” – And preparation of an electronic music piece used for the Olympics overture ceremony – NHK), *Ongaku shinbun* (音楽新聞 Music Journal), 1067, 1964, p. 7.

“Gengyō gijutsu – Denshi ongaku” (現業技術 電子音楽 Work technics – Electronic music), in *NHK nenkan 17 – 1964 – Nihon hōsō kyōkai hen* (NHK年鑑17 1964 日本放送協会編 NHK Almanac 17 – 1964 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1964], p. 193.

“Rajio gengyō gijutsu no shinten – Denshi ongaku” (ラジオ現業技術の進展 電子音楽 Evolution of the broadcast technical work – Electronic music), in *NHK nenkan 13 – 1961 – Nihon hōsō kyōkai hen* (NHK年鑑13 1961 日本放送協会編 NHK Almanac 13 – 1961 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1961], pp. 388-389.

“Shōwa 35 nendo no topikkusu – Itaria shō jushō” (昭和35年度のトピックス イタリア賞受賞 Subjects of great interest of the 35th year of Shōwa – The obtain of Prix Italia), in *NHK nenkan 14 – 1962 1 – Nihon hōsō kyōkai hen* (NHK年鑑14 1962 1 日本放送協会編 NHK Almanac 14 – 1962 1 – Written by the Broadcasting Company of Japan), Tōkyō, Yumani shobō, 2000 [1st ed. 1962], pp. 35-36.

DAVIES Hugh (ed.), *Répertoire international des musiques électroacoustiques / International Electronic Music Catalog – Electronic Music Review Nos. 2/3, April/July 1967*, Paris / New York, Le Groupe de Recherches Musicales de l’O.R.T.F. / The Independent Electronic Music Center, 1968.

KAWASAKI Kōji (川崎弘二) and Satoshi SHIMURA (志村哲), “NHK Tōkyō ni oite seisaku sareta denshi ongaku no chōsa (1952 kara 1968 nen)” (NHK東京において制作された電子音楽の調査 1952～1968年 Survey of Electronic Music composed in Tōkyō NHK – Japan Broadcasting Corporation – 1952-1968), *Journal – Institute of Advanced Media Arts and Sciences*, 8, 2016, pp. 122-137.

MIYOSHI Kiyotatsu (三善清達), Wataru UENAMI (上浪渡), Keimei ASAMI (浅見啓明) and Kōsuke NAKAMURA (中村洪介), “NHK denshi ongaku sutajio” (NHK電子音楽スタジオ NHK Electronic Music Studio), *Ongaku geijutsu* (音楽藝術 Art of Music), 23(8), 1965, pp. 54-59.

MOROI Makoto (諸井誠), “Denshi ongaku – ‘7 no variēshon’ o chūshin ni” (電子音楽 “7のヴァリエーション”を中心に Electronic Music – With a focus on *Shichi no variēshon*), *Ongaku geijutsu* (音楽藝術 Art of music), 15(8), pp. 91-111.

SHIBATA Minao (柴田南雄), “Hōsō kaiseitsu to gendai ongaku” (放送解説と現代音楽 Radio commentary and contemporary music), in SHIBATA Minao (柴田南雄), *Waga ongaku – Waga jinsei* (わが音楽 わが人生 My music – My life), Tōkyō, Iwanami shoten, 1995, pp. 263-279.

TAKATSUJI Tsukasa (高辻士), Hisashi FUJITA (藤田尚), Yoshinori ANDŌ (安藤由典) and Hiroshi SHIOTANI (塩谷宏), “Denshi ongaku” (電子音楽 Musique électronique), *NHK gijutsu kenkyū* (NHK技術研究 NHK Technical Research), 13(4), 1961, p. 348.

TANAKA Yūji (田中雄二), *Denshi ongaku in Japan* (電子音楽 in Japan Electronic Music in Japan), Tōkyō, Aspect, 2001.