Title

日本における Fairlight CMI の受容とその音楽シーンへの影響

Name

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抄録

音響技術の機械化以来、新技術は音楽実践に影響を与え続け、それが音響技術研究の主要な研究対象の一つとなっている。本研究は、新しい音響技術の典型事例として初期デジタル・シンセサイザーの一つ、Fairlight CMI に注目し、その日本における受容と定着の過程を明らかにし、さらに、それが 80 年代日本の音楽シーンに与えた影響を明らかにすることを目的とする。Fairlight CMI の設計者は当初、その製品が強力なデジタル・シンセサイザーとして使用されることを意図していたものの、技術の「解釈の柔軟性」とユーザの主体性の反映の結果、英国においてと同じく日本でも現実にはそのサンプリングとシーケンサーという 2 つの機能が特に好んで使用されることとなった（Harkins 2015, 2016）。さらに、Fairlight CMI の受容過程はそのような単純な描像にとどまらず、ユーザによって Fairlight CMI に対するモチベーション、使用法、認識が大きく異なっていた。本研究では、日本の著名な音楽家や編曲者 4 名に注目して、Fairlight CMI がどう使用され、どう受容されたか、また、それが設計者の当初の意図とどう異なっていたかを明らかにする。Fairlight CMI の音楽文化への導入は、そのユーザと聴衆に、当時の音楽にかかる美意識と伝統について多くの議論、再考、さらには再定義を引き起こし、最終的に音楽実践を再構築した。Fairlight CMI がユーザによって積極的に設計者の想定と異なる扱いを受けたことで、とくにサンプリングとシーケンスの機能の積極的な使用という点で、音楽文化に影響を与え、最終的にはそれを再構成することになった。

キーワード：フェアライト CMI、ドメスティケーション論、音楽技術の社会的構成、共構築

Title

The Acceptance of the Fairlight CMI in Japan and its Influence on the Japanese Music Scene

Name

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Abstract

Technological advances have impacted musical practices since the emergence of mechanical sound technologies, which constitute the focus of sound technology studies. By analyzing a specific type of early digital synthesizers as a typical case of sound technology studies, the present study aims to reveal the acceptance and "domestication" process of the Fairlight Computer Musical Instrument (CMI) synthesizer in Japan as well as its influence on the Japanese music scene in the 1980s. Although its designers originally expected the Fairlight CMI to become a powerful digital synthesizer, sampling and sequencing are two features that its users are particularly interested in, reflecting its "interpretative flexibility" and users' agency in the social construction of the Fairlight CMI, as observed in UK by Harkins (2015, 2016). However, the story of the Fairlight CMI is far from simple, as users' motivation, usage, and perceptions vary significantly when employing the Fairlight CMI. This study explored the motivations and usage patterns of purchasers of the Fairlight CMI in Japan. Four well-known Japanese musicians and arrangers were taken as examples to explain how the Fairlight CMI has been used and viewed among users and how such usage patterns and perceptions have diverged from the original intention of its designers. The introduction of the Fairlight CMI into music culture also caused its users and audience to debate, rethink, and even redefine the aesthetics and traditions recognized as default in music of that era, which ultimately led to the reconstruction of music practices. As the Fairlight CMI was utilized in novel ways by its users, this influenced and reshaped music culture, especially in terms of the Fairlight CMI's sampling and sequencing functions.

Keyword: Fairlight CMI, domestication theory, social construction of music technology, co-construction.

1 Introduction

In March 1982, a rich musician fascinated with electronic synthesizers[4], 安西史孝 (Fumitaka ANZAI), introduced an advanced musical instrument into Japan but did not make its existence known to the wider community of musicians. At that time, ANZAI might not have realized that his introduction of this instrument would usher in a new chapter in the Japanese history of music technology.

The instrument ANZAI introduced in Japan was the Fairlight Computer Musical Instrument (CMI), developed by two Australian engineers in the late 1970s. Nowadays, the word "sampling" is widely known, even to ordinary non-enthusiast audiences, because we have been exposed to many songs produced using digital sampling technology. However, few listeners and musicians know that all digital sampling practices can be traced back to the Fairlight CMI. Recognized as the first digital sampler in music history, the Fairlight CMI has exerted a tremendous impact on the global music scene since its release in 1979.

As Harkins (2016) revealed in the history of the acceptance of digital samplers primarily in the UK, although later users of the Fairlight CMI emphasized its digital sampling and sequencing capabilities, its designers originally intended the Fairlight CMI to become a powerful digital synthesizer. However, its users redefined the usage so that it became celebrated as "the first sampler" in history, clearly diverging from the original intention of its designers. What then happened in Japan, where this Fairlight CMI was introduced at virtually the same time?

In the following sections, the Fairlight CMI is analyzed as a typical case of sound technology, while some of its most notable Japanese users are studied. Following the literature review in Section 2, Section 3 describes the social construction of the Fairlight CMI in detail, focusing on its most significant users in Japan. In Section 4, the influence of the Fairlight CMI on the Japanese music scene is described. In Section 5, a discussion and a conclusion are presented.

The present study emphasizes the technological aspect of the Fairlight CMI, its Japanese users, and relevant music scene in Japan at the time. The research method used in this study was based on a literature review, for which the empirical materials mainly consisted of historical documents, books, newspapers, magazines, and audio-visual materials. We also conducted online interviews with an important Fairlight CMI user in Japan.

2 Literature review

In this study, the Fairlight CMI is analyzed as a sound technology artifact, and the history of its acceptance in Japan and its influence on the Japanese music scene is revealed. To answer the questions raised above, relevant theories in the fields of history and sociology of technology are examined from the perspective of science, technology, and society (STS) research. Among theoretical approaches that have been used to study sound technologies are social construction of technology (SCOT) theory, domestication theory, cultural and media studies theories, and sound technology studies (for overviews, see Pinch & Bijsterveld 2004; 2012). These theoretical approaches focus on the process of interaction and mutual construction between the technology and users. Then, we approach the

above problems primarily with SCOT theory and domestication theory.

2.1 SCOT Theory

In 1984, Trevor Pinch and Wiebe E. Bijker proposed SCOT theory, based on a synthesis of sociology of science, the empirical program of relativism (EPOR) of sociology of scientific knowledge (SSK), and the science-technology relationship. They argued that the EPOR applied to SSK could also be analogized to sociology of technology, and that SCOT theory is an equivalent of the EPOR, extended to sociology of technology, thus rejecting traditional technological determinism and maintaining the anti-essentialist position of technology, which posits that technology itself has no core or essence (Sismondo 2007, pp. 105–106). This position argues that technology does not drive social development, but rather that society constructs technology, which is considered useful.

SCOT theory suggests that a historical account of the development of a particular technology and the resolution of related technological controversies should be divided into three stages, a process explained by Pinch and Bijker (1984) using the development of a safety bicycle as an example. In the first stage, there is a great extent of "interpretative flexibility," a concept borrowed from the EPOR to describe the phenomenon in which the interpretation of technological objects and problems varies from one social group to another, with respect to the technological artifact. Thus, the development of a given technology is constructed by heterogeneous social groups, while there are many possible futures in the early stages of this development, which is in stark contrast to the previously believed linear progressive course of technological development. In the second stage, the multiple possibilities of technological development gradually contract into a specific form as the claims of different social groups are played out, while the interpretative flexibility gradually diminishes until reaching a final stabilization state, called "closure," which marks the resolution of the technical controversy. In the third stage, the controversy is resolved, and the development of the technological object interacts with the broader social context. According to SCOT theory, a successful technology does not necessarily have an intrinsically superior design. Rather than being the cause of success, a better design is the result of success—the "superiority" or better design of a technology is itself constructed by relevant social groups (Sismondo 2007, p. 106).

Among heterogeneous social groups, SCOT theory emphasizes the importance of the group of "users," which is a direct reflection of the shift of STS from focusing on "structures" to "actors" (Sismondo 2007, pp. 37–38). SCOT theory rejects technological determinism and the idea that users are passive recipients of technology, thereby emphasizing their agency, which is one of the central arguments of social construction theories (Oudshoom and Pinch 2003).

Since Pinch developed SCOT theory, he has paid particular attention to the research field of sound, music, and musical instruments. In 1998, Trevor Pinch and Frank Trocco (1998) published a paper titled "The social construction of the early electronic music synthesizer," in which they reviewed the technical history of the Moog synthesizer and used SCOT theory to explain its interpretative flexibility in its early development and how its usage was defined by different groups of users. In 2002, based on the aforementioned study, Pinch and Trocco published a book that proposed a historical account of the development of the Moog synthesizer from an STS perspective, laying the foundation for STS studies of music technology.

In Pinch's study of the Moog synthesizer, while focusing on the synthesizer's designer Robert Moog, he also investigated the different user groups of the synthesizer—pioneering artists, classical musicians, rock musicians, and composers—and their different attitudes toward the synthesizer. He demonstrated how, while the synthesizer provided users with new ways of creating sounds and composing, users, in turn, constructed the ultimate form of the synthesizer (Pinch and Trocco 1998). As Pinch puts it, in the study of STS for musical instruments, we need to "follow the instruments" and thus follow their users (Pinch and Bijsterveld 2012). Moreover, while focusing on users, detractors and non-users should also be considered, since both groups influence the social construction of the technology (Wyatt 2003).

2.2 Domestication Theory

Research methods from fields other than STS and those related to sound and music (e.g., musicology and history of music) should also be added to the methodological resources of sound technology research. Among them, "media studies" on sound storage and transducing media comprise an important approach to sound studies from the STS perspective, as the media of sound storage are of particular interest to the sociology of technology (Pinch & Bijsterveld 2012).

For example, as in cultural and media studies, what Roger Silverstone calls "domestication" (e.g., Silverstone et al. 1992) is crucial. Domestication describes the process by which new technologies go from being rejected or perceived as threatening and unfamiliar to becoming embedded in new cultural practices through their mass use in everyday life. Domestication is a two-directional process; that is, in the process of domestication, both the technological artifact and its users change. Additionally, different individuals' usage patterns might change the form and symbolic function of the technological artifact, which coincides with the idea of "co-construction" in STS theory. Domestication occurs in three ways: symbolic work (i.e., the user's construction of the symbolic value of the technology), practical work (i.e., the individual's use of the technology in everyday life), and cognitive work (i.e., learning to use the technology) (Oudshoom and Pinch 2003).

Timothy Taylor, for example, applies the concept of domestication to analyze the integration of electronic music into the music scene in the 1960s and 1970s. In the 1960s, when electronic music was not yet widespread, the public typically associated electronic soundscapes with science fiction, the future, space, and other similar themes and considered them irrelevant to everyday life, while some people even resisted the use of such electronic sounds. However, through the active promotion of synthesizer users, led by Raymond Scott, Eric Siday, and Suzanne Ciani, the public gradually accepted electronic sound effects through their extensive use in commercials, with such sounds eventually being domesticated and integrated into music culture, becoming an integral part of contemporary music scene (Taylor 2012).

2.3 Theoretical Resources in STS

As mentioned above, theories in the field of sociology of technology, represented by actor network theory (ANT) and SCOT theory, emphasized the process of "co-construction" between human and technological artifacts, while

simultaneously rejecting the determinist and reductionist views about the autonomy of technological "progress" which were previously prevalent in technology studies (Shepherd and Devine 2015, pp. 299–300). That is, anti-determinist and anti-essentialist stances on technology were adopted in sociological studies of technology from the STS perspective. Indeed, technology, as is commonly perceived, does not just exist as a purely technological thing separate from society. Traditional technological determinism seems to divorce technology from society and assumes that it has an intrinsic logic of development that is independent of society. However, technology and society together form a "seamless web" in which technological and social factors are so closely bonded that they cannot be distinguished from each other. Once such facts are recognized, traditional technological determinism will not stand unchallenged (Bijker and Law 1997).

Equally significant, sociological theories of technology, led by SCOT theory, emphasize the agency of the "users" as a group of actors and their key position in the construction of technology. Technology is not what designers want, and no technology has single and fixed usage. Indeed, technology is being actively altered by users. While the design of a technology implies or limits its use, users can use it in their own ways. That is, both the user and technology are "co-constructive."

3 The Acceptance and Construction of the Fairlight CMI in Japan

3.1 The Invention of the Fairlight CMI Series I

The Fairlight CMI originated at a turning point in synthesizer production: the transition from analog to digital. In 1975, two Australians, Peter Vogel and Kim Ryrie, founded the Fairlight company. During that time, Ryrie was acutely aware of the limitations of analog synthesizers, so he discussed this issue with Vogel. Together, they were eager to build their own digital synthesizers (Audio Media Magazine 1996). First, they turned to Tony Furse, a Motorola consultant, in 1976, aiming to build a chip-based digital synthesizer called QASAR M8 (Holmes 2010a). After several attempts, by 1979, Vogel and Ryrie successfully developed the Fairlight CMI and were eager to sell it to musicians. In the UK, famous musicians and producers such as Peter Gabriel, Kate Bush (with her synthesizer manipulator, Richard Burgess), Trevor Horn (with his collaborator J.J. Jeczalik), BBC Radiophonic Workshop, Thomas Dolby, Pet Shop Boys, and Art of Noise purchased this expensive instrument and became users of considerable significance. In the US, famous users, including Stevie Wonder and Herbie Hancock, purchased the instrument (Audio Media Magazine 1996; Holmes 2010b; Harkins 2020, p.17). However, the Fairlight CMI sold well in the UK, Germany, and Japan, but not in the US, apparently because the sheer size of the US made it difficult to sell and support the product (Fairlight Instruments 1981; Vail 1994, p.181). Some other units of the Fairlight CMI were purchased by professional recording studios and universities (Leete 1999).

The Fairlight CMI is generally regarded as the first commercially available digital sampler, although the primary intention of its designers was located in the use of digital synthesis to reproduce the sounds of acoustic instruments. Therefore, "users of the Fairlight CMI began to use it to sample the sounds of everyday life and create the sounds of new instruments." (Harkins 2015)

The design of the Fairlight CMI was clearly ahead of its time[5]. It had a musical keyboard spanning six octaves with real-time control and capability of eight-note polyphony, together with a QWERTY keyboard, a CPU-based QASAR general-purpose computer, and a touch-sensitive screen with a light-pen (Audio Media Magazine 1996; Ellis and Beecher 1981; Fairlight Instruments 1983a). Regarding its software, the sounds generated by the Fairlight CMI were stored in eight voice cards, with each card having a memory capacity of 16 KB, while each unit of the 16 KB RAM was further divided into 128 segments (Grant 1984a). The system had another 64 KB of program RAM plus 16KB of video memory (Last.fm 2008). An eight-inch floppy disc can be used to store music samples and sequences in the memory of the instrument. The design team also provided preset sounds loaded onto two eight-inch floppy disks as a sound library (Harkins 2020, p. 20).

For the user interface on the graphic screen terminal, several "Pages" were designed to be compact and user-friendly[6]. For example, Page 6 was the Waveform Drawing Page, which allowed the user to directly draw or change the waveform of the desired sound. This was based on the theory of digital additive synthesis,[7] while the synthesized sound was automatically calculated by the computer provided by the Fairlight CMI, which is an intuitive way to synthesize sound. Page 8 was the Sound Sampling Page to record sound samples. Lastly, Page 9 was the Music Keyboard Sequencer Page, which was used to record and playback musical sequences (Ellis and Beecher 1981; Fairlight Instruments 1983a; Leete 1999).

Of all the functions offered by Fairlight CMI, one function in particular saw widespread popularity among users while also establishing the place of the Fairlight CMI in the history of electronic musical instruments: its sampling capability. Sampling refers to the process of digitally recording analog sounds, which are then stored in memory (e.g., a floppy disk) for further manipulation (Vail 2014, pp. 31–33; Harkins 2020, p. 5). In the sampling process, analog audio signals are sampled via pulse-code modulation (PCM) [8]and then converted into a digital binary format through an analog-to-digital converter. The samples thus become digital and are stored temporarily or permanently in digital memory. When played back, digital data passes through a digital-to-analog converter into a reconstructed analog audio signal emitted by an amplifier (Russ 2011, pp. 56–59).

With the Fairlight CMI, the user can theoretically sample any natural and acoustic sound via a microphone or tape, save the sample in the memory of a floppy disk, and then play it back at different pitches on the keyboard. The sampled sound can be further edited by mixing it with other sounds, whether natural or synthesized. The design team also provided a variety of preset tones and samples in its software memory for direct use by the manipulator (Fairlight Instruments 1983a).

By today's standards, the sampling quality of the Fairlight CMI is indubitably crude: the sampling depth was 8 bits and the sampling rate was approximately 30 kHz, realized by a Motorola 6800 dual processor, together with a very short sampling duration of 1.5 seconds on average (Audio Media Magazine 1996; Leete 1999; Last.fm 2008). However, it was the Fairlight CMI that first introduced the concept of sampling into music production, making it the precursor of all subsequent computer-based digital samplers (Perone 2022, p. 215).

3.2 The Release of the Fairlight CMI Series II, IIx and III

After the release of the Series I in 1979, the Fairlight CMI was updated based on feedback from its users. For the Series II's release in 1982, Musical Instrument Digital Interface (MIDI) support was added, which made the Fairlight CMI compatible with a wider community of digital synthesizers (Last.fm 2008). Simultaneously, Vogel and Ryrie added the "Page R" sequencer, which they called a "The Real-Time Composer." A sequencer is a device that allows the user to generate and store control signals (called "sequences") to manipulate other instruments for automatic playback. Essentially, a sequencer is a computer that controls other instruments, like the role played by a personal computer in today's music production (Perone 2022, p. 219). By using Page R sequencer provided by the Fairlight CMI, a musician could record and edit a sequence in a similar way to an electronic drum machine, with eight tracks available for independent editing and up to 255 musical patterns at once (Leete 1999). Page R sequencer turned out to be more flexible than Page 9: Keyboard Sequencer Page (which did not allow further editing or quantization) and much easier to use than Page C: Music Composition Language Page (which required superb programming skills and was difficult for a musician to master). A sequence can be stored on a floppy disk with up to 50,000 notes (Holmes 2010a; Fairlight Instruments 1983a). Additionally, Page R sequencer introduced quantization[9] and bar-cycle mode features, which became integrated into the default design of later sequencers (Perone 2022, pp. 121–122; Audio Media Magazine 1996; Gardner 2013).

By using a combination of various functions, musicians could even create and perform music from scratch with just one device, the Fairlight CMI, which was difficult to imagine at the time. For example, the combination of Pages 8, D, 6, and 7 allowed users to sample sounds, while the combination of Pages 9, C, and R could be used for sequencing (Holmes 2010a). This "all-in-one" instrument concept allowed users to independently perform various music production tasks, including synthesis, sampling, and sequencing, thus making the Fairlight CMI the foremost pioneer of modern digital audio workstations (DAW) (Leete 1999; Gardner 2013).

Around 1983, the Fairlight IIx was released as a patch version of the Series II, with its system memory expanded to 256 KB and SMPTE support added (Fairlight Instruments 1985a, p. 42; Fairlight Instruments. 1985b; Wiffen 1985). Subsequently, in 1985, the Fairlight Series III was released with 16-note polyphony and a more advanced sound card that recorded samples at 16-bit and 50 kHz (stereo)/100 kHz (mono) and played back at 200 kHz, with over 90 dB of dynamic range, which was sufficient to reach the CD standard[10] (Audio Media Magazine 1996; Trask 1986; Elen 1986).

Of course, subsequent versions were more expensive: the Series II usually costs more than $25,000, the Series III costs approximately $40,000, and sometimes even more than $100,000 (Holmes 2010a). The Fairlight CMI was even called the "Rolls Royce of synthesizers" at the time (Moran 2011). This made the Fairlight CMI an "elite instrument," affordable exclusively to wealthy musicians, which largely restricted its market. In fact, in the 1980s, most pieces of the Fairlight CMI were sold through acquaintanceship among musicians, rather than through retailing, while only about 300 units of the Fairlight CMI (plus the II and IIx series) were produced in total (Vail 1994, p. 177). Until 1981, only about 60 units of the Fairlight were sold in total, including 15 in England (Ellis and Beecher 1981). Similarly, by 1983, approximately 80 units of the Fairlight had been sold worldwide (Lemer 1983).

3.3 The Introduction of the Fairlight CMI into Japan

3.3.1 安西史孝 (Fumitaka ANZAI)

Japan advanced in terms of its electronic synthesizer industry in the 1980s. In the same decade, the Japanese music industry made a significant push into electronic instruments. Among such instruments' various users, 安西史孝 (Fumitaka ANZAI) was the first musician to introduce the Fairlight CMI into Japan. Born into a music family, ANZAI entered the Roland enterprise in the 1970s, where he was exposed to many advanced synthesizers, drum machines, and samplers. After hearing about the remarkable capabilities of the Fairlight CMI, ANZAI decided to travel to Australia to purchase it for himself. After purchasing one unit, ANZAI and three of his associates spent a week learning how to use this complex machine from the Fairlight employees in Sydney. Kim Ryrie even remembered that "some rich Japanese customers came to us with credit cards, willing to buy [our Fairlight]" (田中 2001, pp. 529–537). After ANZAI brought the Fairlight CMI back to Japan, the company ナニワ楽器 (NANIWA GAKKI) in Osaka became the official sales agent for the Fairlight CMI in Japan in 1982, with 松下電気貿易 (MATSUSHITA) being the distributor (Fairlight Instruments n.d.). In fact, NANIWA GAKKI was willing to introduce some types of advanced instruments from abroad, with the Synclavier and the Fairlight CMI being the main candidates. Finally, NANIWA GAKKI became the official distributor of the Fairlight CMI in Japan. Simultaneously, it also imported other electronic instruments into Japan, such as the Simmons (electronic drums) and E-mu Emulator II (digital sampling synthesizer) (田中 2001, pp. 547–548).

Subsequently, wealthy Japanese musicians purchased the instrument, marking a prelude to the popularization of the Fairlight CMI and the concept of sampling in Japan. According to 山本隆彦 (YAMAMOTO Takahiko), a friend of Ryrie, over 20 units of the Fairlight CMI Series II and IIx, and about 30 units of Series III were sold in Japan. The first Fairlight CMI Series II was purchased by Panasonic and the second by ANZAI, as the leader of his band TPO. Other purchasers included 日本大学 (Nihon University) and famous musicians such as 東海林修 (Osamu SHOJI), 冨田勲 (Isao TOMITA), 矢島賢 (Ken YAJIMA), 船山基紀 (Motoki FUNAYAMA), 坂本龍一 (Ryuichi SAKAMOTO), 久石譲 (Joe HISAISHI), and 林哲司 (Tetsuji HAYASHI) (田中 2001, p. 548).

In March 1982, ANZAI brought the Fairlight CMI back to Japan but did not make its existence known to the public. Instead, it was kept in a studio for internal use. At first, ANZAI used the Fairlight CMI to produce karaoke versions of Japanese pop songs; later, orders for TV commercials and requests from record companies increased. In 1981, ANZAI created the original soundtrack for the cinema version of the hit animation うる星やつら (URUSEI YATSURA), which made him famous among soundtrack musicians (田中 2001, pp. 537–538).

In 1983, ANZAI formed a techno pop band called TPO and participated in the opening ceremony of the Tokyo Music Festival (東京音楽祭). Soon after, they made their official debut as a techno-band through CBS SONY. At that time, SONY had just released its new CD player. Since TPO was a purely computer-based electronic band featuring the Fairlight CMI, its aesthetics matched SONY's digital CD player and thus naturally became the image that SONY used to promote its CD player until the late 1980s (田中 2001, pp. 538–539).

3.3.2 船山基紀 (Motoki FUNAYAMA)

FUNAYAMA was the second musician to purchase the Fairlight CMI and introduce it into the Japanese music scene (船山 2019, p. 150). FUNAYAMA was a pop music arranger active from the 1970s to 1980s. He studied pop music arrangement at the YAMAHA Music Promotion Association (ヤマハ音楽振興會) in his early years, and later entered the pop music scene around 1974 (船山 2019, p. 341). In 1981, he travelled to the US, where he became acquainted with the Fairlight CMI, the most advanced digital synthesizer at that time. Hence, he decided to introduce it to Japan (船山 2019 pp. 147–148).

In his autobiography, published in recent years, FUNAYAMA recalled that during the 1980s, electronic music had become increasingly popular in European and American pop music, so the composers with whom he worked had felt a strong necessity to introduce a more advanced electronic synthesized sound into 歌謡曲 (KAYOKYOKU; i.e., Japanese popular music). Consequently, FUNAYAMA actively introduced the Fairlight's sound effects into KAYOKYOKU, starting with his work on compositions by 筒美京平 (Kyohei TSUTSUMI), producing several best-selling singles and albums from 1984 until the late 1980s. In several songs, FUNAYAMA deliberately used the Fairlight CMI to convey "cosmic," "future," and "science fiction" themes, believing that the sharp sounds produced by sampling with the Fairlight CMI (船山 2019., pp. 150–152).

As a pioneering user of the Fairlight CMI, FUNAYAMA was a pure pop music arranger. When working on compositions for KAYOKYOKU, he faced a lack of understanding from some musicians. Some thought that since he introduced such an advanced instrument, he should use it to make more avant-garde and experimental music, so why did he insist on using the Fairlight to arrange pop music? In this regard, he never considered his works on KAYOKYOKU to be inappropriate (Oricon 1984, p. 10). He believed that he had always been producing songs from the stance of a pop song writer; thus, he maintained that if he were to continue to use the Fairlight, he would receive more orders from the producers of pop singers (船山 2019, pp. 152–153). This proved to be true, as many producers of pop singers later tied him to the sound of the Fairlight, believing that "FUNAYAMA's sound is the very sound of the Fairlight CMI," and thus he received an increasing number of orders for popular songs (ibid., p. 156). He soon attained massive success in the mid- and late-1980s, eventually becoming the second best-selling arranger in Japan to date.

However, FUNAYAMA was also aware of the limitations of the Fairlight CMI, such as the difficulty in achieving some characteristic sounds from analog synthesizers. Simultaneously, the unique sound of the Fairlight which was very "thin" in the high range and had considerable " 音圧 " (sound pressure) in the low and mid ranges, made it suitable for "explosive" and short percussion sounds such as "orchestra hit" (船山 2019, pp. 153–156). Additionally, the use of electronic instruments such as the Fairlight CMI required inordinate time investment. For the songwriting community, which worked at an extremely quick pace in the 1980s, FUNAYAMA's work was very intense (船山 2019 pp. 153–156).

One of the authors had the opportunity to interview FUNAYAMA via email and asked him several questions regarding his views on the Fairlight CMI and its usage. FUNAYAMA stated that he used the Fairlight CMI in almost all of his works from 1984 to the late 1980s, together with other analog and digital synthesizers. In the following lines, an interview with FUNAYAMA is presented:

(1) How would you describe the sounds of Fairlight CMI? For example, are the sounds sharper or more "crystalline" compared to traditional analog synthesizers or other digital synthesizers at that time?

In my private impression, indeed Fairlight sounds sharp. When I first bought Fairlight in 1982, the sampling rate [sic] [11]was still only 8-bit (it became 16-bit just after that). Together with the low resolution and extremely short sampling time, the sampled timbres were rough and harsh, so they matched rock and funk music very much which required strong beats. Fairlight would create booming and blasting sounds easily, and instead it did not fit tender and soft songs.
Regarding the utilization of Fairlight, I was personally influenced by Art Of Noise that compared to musical tones, I tended to use Fairlight to create percussion beats more frequently. Despite some preset sounds that Fairlight has offered like Grand Piano and Strings, I could not merely use these preset sounds to create great arrangements. Moreover, although Fairlight had offered functions like voice stretch and loop, I seldom used these functions.

(2) Did you frequently use the preset timbres? (For example, the famous "ORCH5" as a typical sound from the Fairlight.) Or, did you synthesize new timbres by yourself or other programmers?

As said above, it was not realistic to program or synthesize new timbres by myself due to the technical restriction of Fairlight. Therefore, the method to enlarge the type of sounds was to sample from short sounds in reality. Concerning the preset sounds, I used the Orchestra Hit sound very often, but other preset sounds were not usually applied.

(3) Between "digital synthesis" and "digital sampling," which function do you believe to be more important and useful in the case of Fairlight CMI? Which function did you use most frequently?

It's without doubt that Fairlight CMI is purely used as a 'sampling machine' instead of a synthesizer.

(4) I got to know that you had arranged J-pop songs using Fairlight as early as 1984. So, do you know how did the singers/record producers/the audience feel the sounds at the very beginning stage when electronic sounds were still rare in pop music scene?

No matter in the past or in the present, I believe that one must continue to pursue new sound in order to produce hit songs. As in the 1980s, indeed Fairlight sounded very new and shocking, so that I believe to have made special efforts to produce hit songs by using the Fairlight. Such sound must have shocked the music industry and music scene at that time, so that the request to me increased from that time on with a wider audience getting used to those sounds.

(5) Did you consider the sampled sounds to be human-like or machine-like?

In the 80's I didn't recognize the need for them to be human sounds. This is because YMO and other techno sounds and computer music were all the rage. As I said before, the sampling time at that time was very short, it was difficult to sample beats as it is now, and only short single sounds could be sampled. (As you know, now that computers are getting better, it's easy to program them as if they were played by humans.) So I was trying to create a mechanical sound that was previously unthinkable in the 80's. Even in the 80's, there was music that required human programming, so I tried to program as humanly as possible. However, I think that computers such as Fairlight and MC-4[12] at that time could not exceed human performance. Therefore, I think it was inevitably oriented toward the pursuit of mechanical sound.

(6) Could Fairlight CMI be used in live performance? Or was it a studio-only instrument?

Sometimes I rent my Fairlight IIci to the artist [C-C-B] for their live performance. But just a decoy. Fairlight was switched on, no audio cable was connected and keyboard player played Fairlight, and obviously no sound was heard. Just as a performance.
Yes, Fairlight was 'studio-only' instrument. If You want use Fairlight in your live performance, you can set Fairjight just a few songs. 'Cause loading samples from disk took time. Very slow! Therefore, it is extremely difficult to play two or more songs in a row. As you might think, artists around this time used karaoke for this kind of music.

(7) When you first heard of the sampling function of Fairlight CMI, how did you feel over it?

Sampling is not always better than synthesis, (perhaps) because it just produced an imperfect copy of already existing sounds and could not create new timbres.
Hence, FUNAYAMA may have preferred the sampling and Page R sequencing function provided by Fairlight CMI, which is similar to other users (See Q&A (3)).

3.3.3 坂本龍一 (Ryuichi SAKAMOTO)

SAKAMOTO was a world-renowned musician, recognized especially in the field of soundtrack music, who passed away this year (2023). He pioneered experimental electronic music in Japan in the 1980s. In 1984, he finished his new album called 音楽図鑑 (ONGAKU ZUKAN) composed using the idea of "自動筆記" (automatic writing, i.e., psychography), marked by a distinct tendency toward minimalism (リットー・ミュージック 2015, p. 13).

In the documentary Tokyo Melody, it can be clearly seen that SAKAMOTO had the Fairlight CMI in his studio. In the mid to the late 1980s, he made extensive use of the Fairlight CMI, particularly its sampling and sequencing functions, in his compositions (Lennard 1985). Many recordings of the album ONGAKU ZUKAN were completed as early as 1983. However, after purchasing the Fairlight CMI, he made considerable efforts to re-record all tracks using the Fairlight CMI. According to him, the strong capacity of the Fairlight CMI lies in its conceptualization as an "integrated workstation," which allows the musician to create music from nothing with only one machine providing

sampling and sequencing functions (リットー・ミュージック 2015, pp. 14–18).

Concerning the sound of the Fairlight, SAKAMOTO believed that although the sample depth of 8 bits is low by today's standards, such "cheap" sound was what made the Fairlight unique, which the art pop and new wave band Art of Noise exemplified in their works. The timbres of the Fairlight CMI can be described as "plastic, artificial, and virtual" in tone. Therefore, he did not like using the Fairlight to mimic real sounds. Rather, he sought to create mechanical, artificial, and virtual music that would highlight the strengths of the Fairlight CMI. He was not convinced that we would get to the stage of "pure digitalized" music in the 1980s. On the contrary, he believed that acoustic instruments such as the piano would still be widely used and that they would never be replaced by digital electronic instruments (リットー・ミュージック 2015 pp. 14–18).

The Fairlight CMI was used extensively in the album ONGAKU ZUKAN. For example, in the song Tibetan Dance, SAKAMOTO sampled the sound of a Tibetan lute (Damyen) using the Fairlight; in Replica, he sampled sounds from a typewriter and a glockenspiel; in the song 旅の極北 ("Travel to the Extreme North"), he sampled the sounds of kick and snare drums; meanwhile, in M.A.Y. IN THE BACKYARD, he used the famous orchestra hit sound; in both Paradise Lost and Self Portrait, the famous SARARR sound was used (リットー・ミュージック 2015 pp. 20–26).

In particular, SAKAMOTO loved the percussion beats generated by the Fairlight CMI, like those used by Art of Noise. He really enjoyed the sounds of their drumbeats, so he decided to emulate them. Another reason he valued the Fairlight CMI was that he thought he could escape the limitations of traditional equal-tempered music and create music in his own style, such as gamelan music that included a sort of pentatonic scale. In another version of Ma Mère l'Oye, he used the Fairlight CMI purely as a sampler. As mentioned earlier, although the depth of the 8-bit samples was terrible for music technicians, he preferred the "bad and rough sound" produced by the Fairlight and was quite excited. Thus, the "cheap" sound of the 8-bit samples became an exciting factor thereafter (リットー・ミュージック 2015 pp. 27–31).

3.3.4 冨田勲 (Isao TOMITA)

Like SAKAMOTO, TOMITA is celebrated around the world, mainly as a master of electronic classical music. However, when samplers, such as the Fairlight CMI, were first introduced in the early 1980s, he did not share the excitement of other musicians. On the contrary, he did not recognize the necessity for samplers merely serving as a "substitute for the orchestra." He did not want to reproduce existing orchestral sounds with samplers; instead, he searched for a new sound that he could manipulate freely according to his imagination (田中 2001, p. 171). This suggests that there were at least some individuals like him in the music scene at the time, and their identity as "non-users," or even "detractors," of this new technical artifact, deserves special attention. This controversy caused by the Fairlight CMI is discussed in the following section.

4 The Impact of the Fairlight CMI on the Japanese Music Scene

As discussed above, ANZAI was the first purchaser of the Fairlight CMI, which led to its introduction in Japan in the early 1980s. Subsequently, rich Japanese musicians purchased the Fairlight CMI. As these musicians utilized the Fairlight extensively, the audience became familiar with the Fairlight's sounds, marking the domestication of the

Fairlight CMI in the Japanese music scene. Simultaneously, the Fairlight's sampling and sequencing functions, which its users frequently employed, significantly altered the way music was produced, how musicians and audiences responded to such digital music, and how some critical concepts in music were perceived.

This section reviews the adoption and domestication of Japanese musicians and audiences, followed by a description of the influence of the Fairlight CMI on Japan's synthesizer industry and music production.

4.1 The Popularization of Fairlight Sounds in Music Production in Japan: The Case of "orchestral hits"

Perhaps the Fairlight CMI's clearest impact on the Japanese music scene is the sheer popularity of many of its sounds, which has become widely recognizable to the Japanese public since the mid-1980s because of the massive use of the Fairlight synthesizer's sounds and timbres. Let us begin this discussion with the most famous sound that the Fairlight CMI helped popularize—namely, the "orchestra hit." The orchestra hit refers to a series of short and percussive-like sounds (e.g., ORCH2, ORCH5, TRIAD, etc.) provided by the Fairlight's designers as presets loaded onto its sound library (Brockhaus n.d.). The original "orchestra hit" was in fact sampled from a clip of the performance of Stravinsky's "the Firebird." However, it was made famous by DJ Afrika Bambaataa in his hip-hop hit Planet Rock released in 1982, in which the sampled orchestra hit was frequently mashed into the dance track. Since then, many musicians have extensively used orchestra hit sounds in their songs, particularly black musicians, in synth funk and hip-hop music, and the popularity of orchestra hit continues to this day (Fink 2005).

In addition to the most famous orchestra hit, many other Fairlight sounds were widely used in popular music, such as the ARR1 sound (i.e., SARARR; a "cold" human voice-like sound with low resolution), as well as the "breaking glass" sound, which was originally sampled by Kate Bush, aided by her programmer Richard Burgess (Music Musings & Such 2020; Harkins 2020, pp. 30–31).

In the case of Japan, unsurprisingly, the Fairlight CMI's users also used this famous orchestra hit sound, including SAKAMOTO, in his album ONGAKU ZUKAN (together with the ARR1 sound) mentioned in Section 3. FUNAYAMA also used the recognizable orchestra hit sound in many of his works, such as the impressive intro in 仮面舞踏会 (KAMEN BUTOKAI), released in late 1985 and performed by 少年隊 (SHONENTAI).

After the advent of the MIDI standard, "orchestra hit" was included in the General MIDI Sound Set 1, reflecting the popularity of "orchestra hit," which the Fairlight CMI first incorporated. Since then, many subsequent MIDI instruments, including sample-based digital synthesizers and sound modules—mainly developed by Japanese manufacturers such as Roland, YAMAHA, and KORG—incorporating "orchestra hit" into their synthesizers, including the KORG N1R, Roland SC-88, and YAMAHA TG500 sound modules (Free Wave Samples 2015).

In the 1990s, countless video games and arcade games released by Japanese companies, such as TAITO and KONAMI, adopted the "orchestra hit" sound as a sound effect in their games. Therefore, we are frequently exposed to several types of "orchestra hit" generated by different digital samplers and synthesizers, all of which can be traced back to the original sample by the designers of the Fairlight. These sounds have been promoted by Japanese pop music arrangers, synthesizer manufacturers, and game developers. Thus, the orchestra hit has become a "cult sound," enjoying equal fame as other "cult sounds" such as the E.P. sound from the YAMAHA DX7 and the hand clap and cowbell sounds from the Roland TR-808 (Brockhaus n.d.).

Table 1. Hit Songs Arranged by FUNAYAMA Using the Fairlight CMI (Oricon 1997)

Year	Hit Songs Arranged by FUNAYAMA Using Fairlight CMI	Highest in Oricon
1985	C-C-B "Romantic が止まらない"	Single #2
1985	少年隊 "仮面舞踏会"	Single #1
1986	中山美穂 "ツイてるねノッてるね"	Single #3
1986	中山美穂 "WAKU WAKU させて"	Single #3
1987	少年隊 "ABC"	Single #1
1988	田原俊彦 "抱きしめて TONIGHT"	Single #3
1989	Wink "寂しい熱帯魚"	Single #1

4.2 The "Fairlight 歌謡 (KAYOU)" that Swept the Japanese Popular Music Scene

As discussed in Chapter 3, Japanese purchasers of the Fairlight CMI used this expensive instrument for different genres of music throughout the 1980s. Through the extensive use of Fairlight sounds, Japanese popular music audiences in the 1980s gradually became familiar with the cold, sharp, and, in most cases, sample-based digital soundscapes of the Fairlight CMI. In Japan, although Fairlight sounds can be heard in all genres of music, including pop, rock, ambient, and avant-garde, as well as in movies and commercials, it is in the world of popular music that the Fairlight sounds have affected the most. This is because popular music has the widest audiences.

During the mid-1980s, the Fairlight's sounds were widely incorporated into many hit songs performed by the most famous superstars in the 1980s, mainly attributable to FUNAYAMA, who is now celebrated as the first person to introduce this instrument into the Japanese pop music scene as early as 1984. In our personal interview with FUNAYAMA via e-mail, he elaborated on how he used the Fairlight CMI in some of his major works, following his introduction of the Fairlight in 1984 until the late 1980s, as shown in Table 1, and the following recollection of FUNAYAMA from a personal interview with FUNAYAMA via e-mail.

C-C-B さんの「Romantic が止まらない」

I recorded Fairlight such as Drums, Percussions using with Fairlight's music sequencer「PAGE-R」. Drums sounds like Kick. Snare, HiHats, and other percussion were all originally sampled by me.

Here's「PAGE-R」picture. I used this light pen.

中山美穂さんのアルバム「*EXOTIQUE*」、シングル「ツイてるねノッてるね」

These songs are totally same as「*Romantic* が止まらない」*.*

Fairlight was recorded as Drums, Percussion.

Regarding「ツイてるねノッてるね」*, first of all, my friend arranger* 大村雅朗 *started this project. But one day*

he asked me to finish this song. I didn't know why even now. So this song's arranger were two.

少年隊さんの「*ABC*」…「仮面舞踏会」…
Also I used Drums, Percussions. And from the late 80's, I began to use brass sound mixed with Fairlight CMI
preset sound + Roland Jupiter-8 (analog synth.) + Oberheim OB-8 (analog sinth.).

「仮面舞踏会」
Definitely, needless to say, from very beginning, [orchestra hit] is heard.
This musical idea is clearly influenced by "YES- Owner Of A Lonely Heart."
Of course, other Drums, Percussions, as well.

「抱きしめて *TONIGHT*」
Like others, Drums, Percussion, mixture Brass sound.

ウィンクさんの「淋しい熱帯魚」
Drums, Percussion, mixture Brass sound.

FUNAYAMA produced gorgeous and catchy tunes such as "テクノ歌謡" (Techno-KAYOKYOKU) from 1984 to 1985. Further, as early as 1986, he began to produce "和製ユーロビート歌謡" (Japanese Eurobeat Pops) which refers to Eurobeat songs exclusively produced by Japanese composers and arrangers. At that time, early electronic dance music including the Hi-NRG, Italo disco, and early Eurobeat genres was popular in the Western world and was just about to sweep the Japanese music scene. Featuring the Fairlight CMI as his "ace card," FUNAYAMA and his collaborator TSUTSUMI became pioneers of Japanese Eurobeat, comparable to the legendary British Hi-NRG producer team Stock-Aitken-Waterman.

4.3 The Impact of the Fairlight CMI on the Japanese Synthesizer Industry

In addition to music production, the advent of the Fairlight CMI, especially its sampling function, significantly encouraged the Japanese synthesizer industry to make its own samplers and digital audio workstations. As the first digital sampler in the synthesizer industry, the Fairlight CMI undoubtedly promoted other synthesizer manufacturers to make their own samplers. After all, the concept of sampling is not complicated, which soon led to the emergence of competitors of the Fairlight CMI.

Developed in 1974–1975 by New England Digital, Synclavier used FM synthesis long before YAMAHA DX7, which truly popularized the FM synthesis technique after 1983. Later, Synclavier became also a computer-based integrated workstation, providing synthesis, sampling, and other functions, like the Fairlight CMI (Holmes 2008, p. 265). However, it was not until E-mu Systems introduced the Emulator digital sampling keyboard that most musicians could afford a sampler. Inspired by the sampling technique of the Fairlight CMI, the Emulator was regarded as a cheaper version of the Fairlight (Vail 1994, pp.183–184). In 1981, the Emulator was the first affordable sampler, with a cost of

approximately $10,000 (which was still highly expensive), at a time when only the Fairlight CMI and the Synclavier were available on the market (ibid., p. 182; Gilby 1987).

Simultaneously, the development of drum machines witnessed the adoption of sampling technology. In 1980, Roger Linn developed the LM-1 sample-based drum machine and released the famous LM-2 (i.e., the LinnDrum[13]) in 1982 (Vail 1994, pp. 219–222). The sample-based percussion beats of the LinnDrum sounded realistic and thus became widely used in popular music during the 1980s (e.g., Prince, in particular, used it considerably), especially in synth pop, Hi-NRG, and Eurobeat songs, making it one of the most important drum machines (Brett 2020).

4.4 Japanese Manufacturers of Samplers

Following the introduction of cheaper samplers, led by the Emulator, the development of samplers entered the "second generation," when makers realized that there was a mass market longing for cheaper samplers. It was in this context of early samplers, including the Fairlight CMI, the Emulator, and the LM-1, that Japanese companies began to make their own samplers and gradually took over the sampler market. The LMD-649 was the first sampler created in Japan, developed by 松武秀樹 (Hideki MATSUTAKE) and two other engineers in 1981; it was mainly inspired by the sample-based drum machine LM-1, developed by Roger Linn. The LMD-649 was soon used in albums by YMO and the techno-band Logic System, with MATUTAKE as the manipulator (田中 2001, pp. 494–495).

Since the Fairlight CMI and the Synclavier were very expensive, Japanese manufacturers aimed to create cheaper samplers. For example, the Japanese manufacturer AKAI developed many types of samplers, including the AKAI S612, AKAI S700/X7000, and AKAI S900, which are much cheaper (from around 160,000 to 400,000 JPY) and aimed at the mass market (Gilby 1987). Another manufacturer, Casio, also had the chance to develop cheaper samplers exclusively for the mass market, such as the Casio SK-1 in 1985 (Holmes 2008, p328).

In terms of drum machines, after the Roland TR-808—widely acknowledged as the most important drum machine in history—was released in 1980, Roland developed another drum machine, the TR-707, in 1985. At this time, all drumbeats were generated via digital sampling, indicating the widespread use of sampling technologies among Japanese manufacturers (Vail 2014, p. 85).

In 1987, Roland released another famous synthesizer, the Roland D-50, which was one of the best-selling synthesizers in the 1980s, with nearly 100,000 units sold. The Roland D-50 uses a special method to synthesize its timbre, called linear algorithm synthesis; however, it essentially combines digital sampling (playback) and digital (subtractive) synthesis (Vail 2014, p. 53). Therefore, the landmark set by the Roland D-50 was partially based on digital sampling, which also originated from the Fairlight CMI.

Soon, Japanese manufacturers gradually took over the market of digital synthesizers and samplers, with Roland, YAMAHA, and KORG leading the global trend in the rising digitalized synthesizer industry. In fact, by 1985 when Fairlight released the Series III, samplers were no longer a novelty. A review in 1986 stated that "But catch up they have, and the Series II is now being challenged on all sides by cheaper sampling keyboards and MIDI-linked computer/sampler/sequencer combinations" (Trask 1986). Another review in 1987 stated that "At this time, the Fairlight Series II still dominated the professional recording studios and was the de facto standard on many chart singles. Technically, it started to fall behind as its once state-of-the-art 8-bit samples began sounding a little 'muddy'

when compared to those of the newer instruments" (Gilby 1987).

By the mid-1980s, cheaper samplers, mostly manufactured by Japanese companies, had flooded the synthesizer market. AKAI, Casio, and Roland samplers had considerable success and even challenged the Fairlight and the Synclavier—the "first generation" samplers that were too expensive. Kim Ryrie, the designer of the Fairlight CMI, stated in 1987 that "Ironically, it was Japan's entry into the business computer market which prompted Fairlight to phase themselves out of that area, feeling it would no longer be profitable for them" (Trask 1987). Finally, cheaper samplers (mainly manufactured by the Japanese) were able to replace the Fairlight CMI in the synthesizer industry in the late 1980s.

4.5 The Birth of the term " 打ち込み (UCHIKOMI)" in Japan

Another remarkable feature of the Fairlight CMI was its Page R sequencing function. However, in terms of sequencing, the Fairlight CMI was not a pioneering instrument, unlike sampling. Before the Page R Sequencer was offered by the Fairlight CMI in 1982, sequencing had been playing an important part in musical practices, though music pre-programmed by sequencers was not popularized until the epoch-making digital sequencer Roland MC-8 was released in 1977 (while the more advanced version, the MC-4, was released in 1981), several years earlier than the Fairlight CMI's Page R Sequencer in Series II (田中 2001, p. 327). The Roland MC-8 had a large memory capacity of 16 KB for storing up to 5,300 notes, which allowed musicians to pre-record a whole piece of music prior to music production or live performances for the first time. During playback, the operator simply pressed a key and the entire sequence could be played automatically (Perone 2022, pp. 219–220; Vail 1994, pp. 216–218).

However, it was extremely slow to program the MC-8. Usually, a sequence of up to one minute in length took one night to program (田中 2001, p. 338; p. 350). Due to the required time investment as well as the complexity of programming the sequencer, there appeared an entire new job that differed from that of recording engineers, namely, manipulators or operators in Japan. Such programming work was called " 打ち込み (UCHIKOMI)" (programming) in Japan (田中 2001, pp. 251–252). Since the late 1970s, the concept of UCHIKOMI was domesticated in the Japanese music scene and ultimately became a standard term for "Desktop Music (DTM) production" in Japan. In the mid-1980s, compared to America—where musicians liked to play by themselves (手弾き , TEBIKI) when producing a pop song—in Japan, UCHIKOMI (i.e., pre-recorded sequences) still remained the main method of production in pop music (田中 2001 p. 526). FUNAYAMA, for example, usually had two manipulators helping him when he used the Fairlight CMI (船山 2019, p. 155).

From the mid-1980s to the 1990s, with MIDI sequencers entering the mainstream, digital sequencers were further adopted in Japan. After the popularization of PCs, sequencers were finally incorporated into the computer and became an inseparable part of modern DAWs (Digital Audio Workstations) (田中 2001, p. 525; Perone 2022, pp. 219–220).

4.6 Japanese Manufacturers of DAWs

Besides being the first sampler and a powerful sequencer, the Fairlight CMI was also one of the first "integrated

workstations," along with the Synclavier, to define the concept of DAW, which combines synthesis, sampling, and sequencing functions together, providing the capacity to "record, edit, and synchronize multiple tracks of music input" (Holmes 2008, p. 278).

In 1988, the Japanese manufacturer KORG released the epoch-making computer-based digital workstation KORG M1, combining digital sampling, digital synthesizing, sequencing, a drum machine, and an onboard display in a single instrument, marking the complete acceptance of sampling technology, as well as the concept of DAW, by most musicians (Holmes 2008, p. 268). Approximately 250,000 units of the KORG M1 were sold, making it the best-selling synthesizer of all time, surpassing the legendary YAMAHA DX7 (Vail 2014, p. 124). The sampling function of the KORG M1 was clearly a continuation of the Fairlight CMI, but it was much cheaper. The PCM sample-based workstation KORG M1 was so popular in Japan that it led to the term "PCM 音源" (sample-based sounds) being domesticated into the Japanese music scene from the late 1980s onward (谷口 et al. 2015, pp. 211–212).

In conclusion, in response to the growth of sampling technology and the emergence of the workstation concept (first introduced by the Fairlight CMI), Japanese manufacturers began to develop their own samplers, sample-based drum machines, and DAWS in the mid-1980s, and eventually took over the sampler market and became the dominant force in the new digital synthesizer industry, a legacy that continues until now (Pinch and Bijsterveld 2003).

4.7 A Timetable Demonstrating the Development of Fairlight CMI

Discussed above are the major effects of the Fairlight CMI on the Japanese music scene since its introduction in the early 1980s. To make it easier to comprehend, Table 2 displays a timetable of the major events regarding the development, acceptance, and impact of the Fairlight CMI listed in chronological order.

Table 2. The Development of the Fairlight CMI and Related Events (Last.fm 2008)

Year	Development of Fairlight CMI	Relevant Events and Landmarks
1976	- QASAR M8 digital synth developed	
1977		- Prophet-5 polyphonic analog synth;
		- Roland MC-8 digital sequencer
1978		- Synclavier I digital workstation
1979	Fairlight Series I released with:	
	- 8-voice polyphony,	
	- digital additive synthesis,	
	- being the first digital sampler ever,	
	- 8-bit @ 16kHz sampling	

1980		- LM-1 sample-based drum machine; - Roland TR-808 drum machine; - Synclavier II digital workstation
1981		- E-mu Emulator digital sampler; - Roland MC-4 digital sequencer; - LMD-649 sampler developed
1982	Fairlight Series II released with: - 8-voice polyphony, - Page R Sequencer added, - MIDI support added, - 8-bit @ up to 30kHz sampling	- 安西史孝 brought the first Fairlight CMI back to Japan; - NANIWA GAKKI became the sales agent of Fairlight CMI in Japan; - LinnDrum LM-2 sample-based drum machine; - Synclavier II added sampling
1983	Fairlight Series IIx released with: - 8-voice polyphony, - SMPTE support added, - 8-bit @ up to 30kHz sampling	- YAMAHA DX7 digital synth with 200,000-unit sales (FM synthesis); - MIDI standardized
1984		- 船山基紀 became a major player in the pop music scene of Japan with the Fairlight
1985	Fairlight Series III released with: - 16-voice polyphony, - CAPS Sequencer added, - 16-bit @ 100kHz (mono) & 16-bit @ 50kHz (stereo) sampling	- Roland TR-707 sample-based drum machine; - AKAI S612 digital sampler; - Casio SK-1 digital sampler
1986		- AKAI S900 digital sampler
1987		- Roland D-50 digital synth with 100,000-unit sales (LA synthesis)
1988		- KORG M1 digital workstation with 250,000-unit sales (PCM synthesis)

5 Discussion and Conclusion

5.1 Usage of Fairlight CMI against the Intention of Its Designers

Many Japanese Fairlight users and purchasers often used the instrument against the expectations of its designers as happened in the UK (Harkins 2016). The Fairlight CMI, which was intended by its designers to be a "digital

synthesizer," is today universally acclaimed as the first "digital sampler" in history. However, neither Vogel nor Ryrie focused on its sampling function, and Ryrie even considered such sampling function as "cheating." Recalls Ryrie:

> We wanted to digitally create sounds that were very similar to acoustic musical instruments, and that had the same amount of control as a player of an acoustic instrument has over his or her instrument. Sampling gave us the complexity of the sound that we had failed to create digitally, but not the control we were looking for. We could only control things like the attack, sustain, vibrato, and decay of a sample, which was a very, very severe limitation of the original goal that we had set ourselves. We regarded using recorded real-life sounds as a compromise - as cheating - and we didn't feel particularly proud of it. (Audio media magazine 1986)

Although what the designers greatly valued was the Fairlight's additive synthesis capability to synthesize new tones, its Japanese users, like their British counterparts, did not follow the original intentions of its designers very much. Most users in its important markets considered sampling and sequencing to be its most powerful features. Soon after, designers realized that most purchasers preferred the sampling function to the additive synthesis function. Subsequently, the Fairlight IIx's brochure soon ramped up the promotion of this feature with a slogan clearly printed on the first page: "[You can create] ANY SOUND in theory AND in practice [with Fairlight[14]]." Another advertisement in the February 1982 issue of Keyboard magazine described the Fairlight CMI as an "Orchestra for sale?" using a picture of a real orchestra, again emphasizing the Fairlight's capacity to emulate real sounds through sampling.[15]

5.2 Japanese Users' Views and the Construction of the Fairlight CMI

5.2.1 Users' views on sampling sounds of the Fairlight

The sampling function of the Fairlight is particularly popular among the users. However, there remains a difference in opinions among users regarding sampled sounds. The Welsh rock musician Blue Weaver believed that sounds sampled by the Fairlight CMI sounded better than the original sounds (Electronic Soundmaker 1983). FUNAYAMA was aware that sampled sounds are not necessarily better suited for music than synthesized sounds; in his view, the sounds sampled by the Fairlight are only suitable for percussion beats and rhythmic music and not for ballads. Conversely, TOMITA did not consider the need for sampled sounds. In his opinion, synthesizers should be used to create entirely new sounds rather than poor imitations of real sounds.

5.2.2 Hi-Fi and Lo-Fi Sounds

Specifically, we observed two groups of musicians employing different auditory modes, longing for Hi-Fi and Lo-Fi. With regard to the rough sound of the Fairlight, manipulators such as ANZAI were not satisfied with such rough sound quality, so they bought the Fairlight Series III as soon as possible; however, there were also people who preferred such rough qualities. For instance, SAKAMOTO used the Fairlight precisely because of its Lo-Fi sound, which went against musicians' and the public's traditional pursuit of Hi-Fi sounds.

5.2.3 Creating New Sounds vs. Imitating Existing Sounds

Thus, it is clear there was a paradox between the "advanced" and "conservative" aspects of the Fairlight CMI's technology. In the 1960s and the 1970s, analog synthesizers were used to create "new tones" that had not been heard before. The Fairlight CMI, however, used primarily as a digital sampler, was considered more technically "advanced," but it was mainly used to emulate old sounds that were already in existence. TOMITA recognized this contradiction between the "advanced" and "conservative" aspects of the Fairlight CMI, which was the main reason why he kept silent regarding the Fairlight CMI. This indicates that there was a degree of resistance to the domestication of the Fairlight; however, a certain level of conservatism would help integrate and domesticate the Fairlight into global pop music.

5.2.4 Machine Aesthetics vs. Human Aesthetics

The "mechanical" aesthetics of the Fairlight CMI received considerable attention. SAKAMOTO was particularly fond of the mechanical rhythm of the Page R sequencer. FUNAYAMA shared a similar perspective, namely, that the Fairlight CMI could be used to create a mechanical sound and deliberately used it in some of his works to depict themes related to science fiction and the future.

5.2.5 Different Genres of Musical Composition

It is also worth mentioning that although most users of the Fairlight CMI regarded it as the most advanced electronic instrument of its age, they used it in different contexts. ANZAI (and HISAISHI) used the Fairlight CMI in film and animation soundtrack composition; SAKAMOTO used it for experimental electronic music and minimalistic music and "art pop"; TOMITA devoted himself to electronic classical music. However, FUNAYAMA insisted on using it exclusively in pop music and KAYOKYOKU arrangement, disregarding the notion that pop music was not worthy of such advanced instruments.

5.2.6 The Pursuit of Studio Instruments and Live Performances

ANZAI established techno-pop bands in pursuit of using the Fairlight for live performances. SAKAMOTO also used the Fairlight in live performances for his experimental and minimalistic music. However, FUNAYAMA was opposed to live performances, as he completely distrusted the capacity of the Fairlight CMI to perform live due to the limitation that it required a long time to program it (" 打ち込み ").

5.3 Conclusion

In conclusion, different users have different views on the Fairlight CMI. As observed in the UK (Harkins 2015, 2016), however, virtually all users in Japan regarded the sampling and sequencing functions as the most important

features of the Fairlight CMI, which underscores its "interpretative flexibility" and users' agency in the construction process of the Fairlight CMI. Furthermore, through users' exploration of the instrument, debate and controversy with non-users, and feedback and interaction between the users and designers, closure was finally achieved, and the Fairlight CMI was constructed, incorporated, and domesticated in a way completely different from what its designers originally intended. Specifically, the Fairlight CMI was domesticated into the music scene as the first sampler or DAW worldwide rather than as an advanced digital synthesizer. In other words, in this respect, it is largely analogous to what happened in the UK (Harkins 2016).

The story of the Fairlight CMI in Japan is far from simple, as its users' motivation, usage, and perceptions vary greatly. This study explored the motivations (i.e., why they use it) and usage (how they use it) of different purchasers of the Fairlight CMI in Japan. Four Japanese musicians or arrangers—FUNAYAMA, SAKAMOTO, TOMITA, and ANZAI—were identified as key examples of how the Fairlight CMI was used and viewed differently among users, and how this diverged from the original intention of its designers.

Simultaneously, the introduction of the Fairlight CMI into the Japanese music culture led its users and audience to debate, rethink, and even redefine the aesthetics and traditions recognized as default at the time, which ultimately led to the reconstruction of the Japanese music scene. When users of the Fairlight CMI explored its full capabilities of even the limited number of functions that they exploited, they influenced and finally reshaped music culture, especially in terms of sampling and sequencing. Subsequently, the wider Japanese audience became familiarized with the sound of the Fairlight CMI through many hit songs (especially in Japanese Eurobeat, dance music and so called "black contemporary" music as well as KAYOKYOKU (Japanese Popular music)) incorporated Fairlight sounds in the 1980s, witnessing the popularity of the sounds during that decade. Japanese manufacturers also developed their own samplers, sample-based synthesizers, drum machines, and DAWs as a reaction to the introduction of the Fairlight CMI. In the late 1980s, cheaper Japanese samplers were able to replace the Fairlight CMI in the synthesizer market, using second-generation samplers. Through diverse responses (including doubt, criticism, and even opposition) to the Fairlight CMI, it was eventually accepted and domesticated into the Japanese music scene in the 1980s and was finally celebrated worldwide as the first sampler in history. This left an indelible mark on the history of sound technology.

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4 Electronic synthesizers are (music) instruments that use electronic circuits to create and play various sounds.

5 Out Of Phase, "Fairlight CMI IIx," https://www.outofphase.fr/en/fairlight-cmi-iix-en/ (accessed July 26, 2023).

6 Out Of Phase, "User's Manual V3.09," https://www.outofphase.fr/wp-content/uploads/2023/04/cmi_users_manual_v3_09.pdf (accessed July 26, 2023).

7 Additive synthesis: A major type of sound synthesis in which the desired tone is synthesized by adding the sine waves corresponding to the fundamental frequency and overtones together. Additive synthesis is the most intuitive way of sound synthesis.

8 PCM: a type of modulation technique that converts the original signal into a purely digital form, which had been widely applied in telecommunications before PCM was adopted for electronic musical instruments.

9 Quantization refers to the process to make the notes inputted into the sequencer to keep up perfectly with the rhythm and to synchronize all voice channels. The idea of quantization was first introduced in 1978 by Roger Linn for his drum machine LM-1 (cf. Chapter 4) (Vail 1994, p. 215). Without quantization, for example, the notes you input might be "slightly faster" or "slightly slower" than you expect, since humans cannot perceive tempo perfectly and press the key on the music keyboard exactly on time. Therefore, quantization helps the user restrict the notes exactly to the "timeslots" in a minimum time scale (Fairlight Instruments 1983b, pp. 24–25).

10 CD Standard: i.e., 16-bit @ 44.1 kHz, meaning that every channel stores 44.1 kilos of sampling per second with 16 bits within every sample. Hence, the bit rate is 16bit*44.1kHz = 705.6kbps = 88.2KB/s (1 byte equals to 8 bit) (Roads 2011, p. 37).

11 We should interpret that FUNAYAMA actually meant "sampling depth" here.

12 MC-4: Referring to Roland MC-4 sequencer, one of the most powerful digital sequencers in the 1980s.

13 LinnDrum: A sample-based drum machine developed by Roger Linn. Following its release in 1982, it became one of the most popular drum machines during the 1980s. The drumbeats were generated from PCM digital sampling and thus sounded real (Russ 2011, p. 338; Vail 2014, p. 127).

14 Fairlight Instruments, "Fairlight CMI IIx Brochure," http://www.midimanuals.com/manuals/fairlight/fairlight_

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15　RetroSynthAds, "Fairlight CMI "Orchestra for sale?" ad," Keyboard (1982), http://retrosynthads.blogspot.com/2011/10/fairlight-cmi-orchestra-for-sale-ad.html (accessed July 26, 2023).