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Introduction

The below research is questioning the possibility of achieving a certain mix quality and compositional style of German producer Christian Bruhn. For this experiment I created a four track EP with my own composition, which is undergoing a certain creation and mix process in spirit of the Captain Future (CF) aesthetic.

The question I will address in my analysis is: 'Is it possible to produce and replicate the mix aesthetics of the CF soundtrack without analog equipment and limited resources? What differences can the average listener identify when it is compared to the original reference soundtrack?'

Before I begin, I would like to acknowledge that the experiment of getting an identical mix aesthetic is likely impossible, as there are many factors that contribute to the overall sound, e.g. choice of gear, mixing console, microphones, instruments, placements, which are primary considerations backed with secondary complex matters such as intention, attitude, environment and process which will broaden the sonic spectrum of contribution and music analyses. An example would be U2's Joshua Tree (1987) - it was tracked with a vintage, 1972 Neve console and then recorded to analog tape. The Joshua Tree would have not sounded like this if it had been programmed with a LinnDrum and Publison instead, which was quite popular in the 80s and used by Artists like A-ha 'Take on Me', Madonna 'Lucky Star', Men Without Hats 'Safety Dance', etc.

Bennett (2019, p.9-10) states that the choice and application of technologies to the recording process are equally important as the choice of musical instruments; the sonic alignment of sound recording and production technology to the aesthetic musical intention is so important to the over-all integrity of the record, and it's precisely these factors that

neither popular music studies nor popular musicology has addressed in any great depth until very recently.

My technological approach is a hybrid of analog and digital. Whilst I don't have the equipment that Bruhn has and neither the session musicians with their skill and influences at the time, my focus will be entirely on a close replication of the mix aesthetic of the Captain Future soundtrack.

Composition & Arrangement

Before I go into the mixing aspect, I had to ask myself what makes Bruhn's soundtrack so good that it's still memorable and timeless? Drawing a layout on paper, it was mainly the arrangement, the melodies, the choices of synthesiser sounds, the skilful bass techniques, the perfect sounding drums, the catchy 70s guitar play style and effects. In the beginning I wasn't able to offer any of that. My compositions I recorded in Logic were chaotic and my limited bass and guitar skills couldn't bring it to the performance level of the soundtrack. I decided to acquire session musicians and to analyse Bruhn's work in depth, writing down each song to see if I can recognise a pattern or something that would help me to make a similar composition. After writing everything down, it became clear to me that the reason why it's so memorable is because of the repetition, but not too often and not always following the same structure (see appendix 1 for a structure breakdown). There is a variety of cleverly placed and small themes, that isn't obvious to the average listener unless you do an in-depth analysis breaking it down.

After spending days on reviewing and preparing the synth sounds that sounded similar to what I heard on the CF soundtrack, I started composing with the structure template that I created from analysing Bruhn's work, but not to the anime footage. I later found out in

online video interview with Bruhn, that he had made the music already and not specifically to the anime footage either. He said it was intended for a western and he kept it in his drawer until he found an opportunity to use the material, which was when music for CF was required. He then tailored the sounds for the futuristic space anime.

I found that the composing style was very different from what I learned and we know in these modern days: being now in 2019 and from my songwriting and compositional experience in writing film music, the audience and critics demand a lot more variety in sounds, arrangement and structure. Having thoroughly analysed the CF soundtrack, the variety is kept minimal, for example Bruhn playing a solo on the synth is on 'Vor Dem Start' (see audio reference folder), but not on every track. Sometimes there were very minor changes in the bass or guitar lick, but still following the same chord progression. Whilst I considered making a modern arrangement with more variety, I decided to follow Bruhn's path: a repetitive structure with minor variation. The next obstacle that was very important in order to make an epic Captain Future style EP was the 70s guitar playing style, the funky bass lines with slap or octave alternating play style and the drums. I was able to midi program everything apart from the guitar, which required someone sharing the same vision I had and a high skill level on the guitar.

I outsourced all musicians from Gumtree, except for the bass player, whom I'm friends with. I received many demos, from est. 30 applicants and I short-listed five drummers that were capable of playing like Todd Canedy, the drummer on the CF soundtrack.

Synthesisers

Since the start of the production project I have been in contact with Christian Bruhn to enquire about his synthesisers that he used on the soundtrack, which were:

- Prophet V

- Jupiter IV

- Mini-Moog

Along with keyboardist Kristian Schultze.

As I don't have access to the above synthesisers, the equivalent models for me to use were plug-ins made by Arturia:

- Prophet V

- Jup-8

- Mini V

I was limiting myself to these 3 synthesisers only to get the sounds I needed. I also noticed that Bruhn used a lot of textured sounds in the background that gives the track atmosphere, for example randomised bell sounds that sound like glitter effects in 'Feinde Greifen An'. I find that the Mini Moog is very good for creating ambient and synth bass sounds. For pad and texture effects I used the Prophet V and Jup-8.

Furthermore, he used a swell sound that is featured in almost every track. A recreation of the swell sound is in appendix 2.

Other preparation

I had a meeting with the guitarist and bass player to record ideas and I send them a draft with the parts I liked for preparation.

As for the drums, I couldn't do much preparation as I struggled booking a drum recording room at BIMM, where I adapted to unorthodox methods: the plan was to record all the five drummers, each drummer having one hour. I chose five drummers to have selection and backup in case people couldn't make it. Two of the five drummers dropped out last minute, which proves that good planning for backup helped to not waste the pre-paid recording session.

Drums

The soundtrack was recorded in 1980. I have looked into the drum sounds from multiple eras to identify the resonance and tonality starting from the 1950s. In the earlier days the drums were much thinner sounding and more in the background back then. The 1960s recordings had a lot more kick resonance than in the 1950s, but it was still not close to the soundtrack. The 1970s: I listened to 'September' by Earth, Wind & Fire from 1978 which already had a more defined and detailed drum sound, crispy, punchy, dry. Especially also 'Lovely Day' by Bill Withers (1977) - there is much more resemblance to Bruhn's recording with the snare, bass, crispy high-hats, a wah-wah guitar sound. Even the drums of the original YMCA version by Village People from 1979 has a strong resemblance to the CF soundtrack.

I tried to find some old 1970s recording footage on the internet, but couldn't find anything. The 'replicated' 70 sounds recorded by modern drummers did not sound anything like the

soundtrack either. I followed the 70's drum recording suggestions by Bobby Owsinski and Sylvia Massy.

Below is a list of microphones I used.

Microphones

- Kick: Electro-voice RE20

- Snare top: Sure SM57 + Neumann KM84

- Snare Bottom: SM57

- Toms: Sennheiser MD421

- Hi-Hat: Sontronics STC1

- Overhead: Mono OH Lucas CS1 + Stereo pair of Coles 4038

- Room Mics: AKG414

More information is in appendix 3.

Recording at Dean Street Studios

DRUMS

The drums recording session at Dean Street Studios was challenging in achieving a sound close to the reference tracks. I created an initial equaliser (EQ) starting point and as the drummer was playing, I noticed that the snare and toms were resonating a lot of reverb and the brightness was also a problem. Another problem was the hi-hat which sounded dark and was missing a lot of top end, but this could be down to the choice of cymbals and microphone. To tackle the snare problem, we replaced the 'Ludwig Chrome' snare with 'Ludwig Black Beauty' which sounded a lot more closer to the reference tracks, but I was still missing the dryness. We put a wallet on the snare which helped, but I still wasn't happy with how it sounded and I tried a light tea towel, first covering half the snare and comparing it to a fully cover snare. The fully covered snare sounded the best to me, along with partially covered toms. I did like the KM84 on the snare because they gave the snare sound a lot more body in the 200Hz region than just using a single SM57. For the hi-hat, I'm aware that lighter cymbals are better for recording to get more detail, but unfortunately Dean Street Studios didn't have anything and neither the drummers. I was listening to the drum sound on its own and none of the cymbals had the sound I was looking. The microphone Sontronics STC1S on the dark hi-hat was suggested by the sound engineer and later I realised that it wasn't suitable. The frequency response of this microphone is not designed for frequencies above 10kHz, which chart confirms a graduate declination from 10kHz (appendix 3). I would have preferred a 1978 Shure SM81 due to its wider frequency range over the Sontronics, but since the Studio had no other vintage mics the STC1S had to be used. The kick had a pillow inside as recommended by the sound engineer, but only later I found out that I didn't like the sound of it.

BASS AND GUITAR

For the bass recording, Dean Street Studios only had one vintage amp available, an AMPEG B15 where I requested to record with a Neumann U87, the DI and my own microphone, a Telefunken AK47. Having listened to all three microphones, I decided to go with the Telefunken because it captured a lot more frequencies and it had more clarity.

For the guitar recording I was given a selection of five vintage amplifiers:

- VOX AC15
- Fender Blues Junior III
- Orange Tiny Terror
- Marshall Classic 5
- Soundcity 20C

After testing the sounds with my guitarist, I decided on the Fender amplifier. I requested three microphones to be used: Royer R121, Neumann KM84 on-axis and the SM57 off-axis (appendix 4).

Comping

I was listening very carefully to the recordings and made decisions on what to keep / replicate and what to discard based on the tonality, technique, play style, loudness, accent, effect (see appendix 4). One of the drummers with over 30 years of experience was very talented, but at the same time I could hear his insecurity when he was hesitant to play a different style. It was interesting to observe, because it has showed me that attitude really

matters when you commence recording. I think that he would have had a fair chance in being selected for this EP, had he made preparation with notation.

Mix

After the process of arranging, recording and comping, I started the mix in Logic where I encountered a lot of masking issues with the synthesisers and other conflicting instruments. I also noticed that the bass recordings had too much gain that created distortion in some regions where slap bass was played. I personally found it unpleasant as it gives the slap sections a different character; it's unfortunate that this wasn't detected by me nor the engineer who was operating the computer. The struggle with the bass was to even-out these sections, because they sounded very distorted with the saturation I applied on the bass channel.

Mixing the drums was also very difficult, particularly a harsh and dark sounding hi-hat, the kick that was not giving enough low-end in the 60Hz-110Hz region, and the snare that did not sounded anywhere near Bruhn's recordings. I tried to manipulate it with an EQ, used compression from an 1167 and saturation from the Decapitator plugin by SoundToys to get that 70's character to it, but ultimately and in my opinion, it comes down to the base recordings. A contemporary drum kit will not resemble the sound of a drum 70s kit, neither the microphone if it's not vintage enough and if it's not recorded into a vintage channel strip from that era.

I had a meeting with my mentor and told him about the struggles I'm facing of achieving a 'dirtier' sound. He suggested to use a tape machine plugin on every channel, which I had not considered as I was already using the Decapitator plugin on every channel strip, which

has analog saturation. Originally I wanted to use the tape plugin during the final mix / mastering, but I'm glad I tried out his method as it applied a different kind of warm saturation, making each track sound smooth than crisp, which I liked. I used the Kramer tape plugin by Waves.

The benefits of tape: "Ironically, the single biggest drawback of tape also explains its appeal. The non-linear distortion that changes the sound also turns out to bestow a certain warmth. The more squashed the signal becomes at high input levels, the richer it is in additional (and nice sounding) harmonic distortion components." (White, 2015, p.15)

Mastering

For the mastering I went to Pierce Entertainment Studios and used their big speakers to identify harshness, low end issues and unwanted frequencies. I identified a few issues on the mix, such as still the harshness on the hi-hats, muddiness and some masking issues. The mastering facility had only two tools to use: The Manley Massive Passive Pre-EQ and the Alan Smart C2 compressor. The Avalon post-EQ did not work at the time I was there. I took out some of the harshness in the 10-12kHz range and reduced some of the mids in the 200Hz with the two devices they had, but I wasn't satisfied with the sound. The 'analog mastering' was still digitally recorded into a laptop via the ID14 audio interface. I took recordings for comparison purposes, which I would later compare against my own mastering and the online AI-mastering service provided by LANDR.

My mastering chain:

Studer A800

FabFilter MultiBand

SSL Compressor

FabFilter Q2

UAD Precision Maximiser

UAD Precision Limiter

Figure 1

Figure 1: the first track is my own mastering with subtle 2:1 compression (see production project folder), leaving a lot more dynamics like the tracks that were produced in the early 1980s. The second track was mastered at Pierce with no option of maximising the sound or using a limiter. The third and fourth track was done using online mastering services provided by LANDR, one with low and medium compression. Having critically listened to all 4 mastering options, I must say that using the LANDR service with low compression provided a better result than my own basic mastering attempt. The worst out of the four is the Pierce master as I don't have the ear training to fully master the songs by hearing and without visual reference.

I also tried to experiment with match EQ and tape degradation, where I used five times the Studer A800 + Match EQ and in another session the Ampex ATR-102 + Match EQ (see appendix material folder). The results were interesting, because it wasn't improving the mix and neither did it bring it any closer to the mix aesthetics of the reference tracks.

Evaluation and Analysis

I have collected data from 65 participants (see appendix 6 for full report) through advertisement on Instagram and Facebook. From the analysis, the EP was well received by a diversity of listeners. When asking participants if they can hear any differences, the commentary was on the modern and clean sound on my production, others did not focus on the mix aesthetics but more on the instrumentation, feel or beat. As for improvement: I interpret that listeners that gave improvement suggestions, generally wanted a rougher analog sound / closer mix to the reference tracks. On the positive comments: Participants still thought the production delivered a 'retro feel' or they liked the arrangement, some of them re-connected with nostalgia Captain Future memories.

Conclusion

Overall the project was a great learning experience, with a lot of fun and opportunities, especially since it was my first time recording drums. From my personal experience in working with other musicians, I have anticipated dropouts, which is why I always have backup plans and organisation is the key to getting things done. The drum recordings are not perfect, but my own philosophy is "I will work with what I have".

I also learned not to trust the sound engineer. After taking the recordings home and as the listening environment changes, I was rather disappointed with the overall sound, although it sounded good in the studio. I didn't want to use samples, because the drum recordings still had some kind of 'roughness' to it and I wanted to go through the process of trying to make them sound great for my own learning experience.

As for the mix aesthetics, I have come to the conclusion that it is impossible and very hard to replicate it, let alone even making it sound remotely more 70s/80s is extremely difficult with modern software and plugins. Even using multiple tape plugins doesn't give you the desired degradation effect. A digital recording processed in the DAW will always sound crisp and modern, than a recording through an analog channel strip or a device from that specific era.

To answer my own research question if the average listener can identify a difference when the music is presented with anime footage from 1979, I would say that it really depends on the individual's perception, music experience and listening focus at the time of hearing to the song. Some participants had their focus on the random video clips that I put together, others on 70s/80s bands that they are familiar with making comparisons and suggestions towards their style. Even suggesting vocals. However, based on the feedback on my questionnaire, 93% of the participants felt that my music belonged on the CF soundtrack.

I personally think that I could have done a better mix with more time for research, but perhaps near future I can do another CF project with a slightly different approach. Despite my own mix criticism, I'm still very satisfied with the learning outcome and result I achieved in the short amount of time and the limitations. The mentoring sessions were very helpful and encouraging me to reach out to Christian Bruhn who then contributed towards my project with a special interview (appendix 7).

Reference List

AKG (2019) *C414 XLII Reference multipattern condenser microphone.* Available at: https://
www.akg.com/Microphones/Condenser%20Microphones/C414+XLII.html (Accessed: 08 June
2019).

AKG (2018) *AKG Microphones: The Evolution of the AKG C-Series.* Available at: https://
thehub.musiciansfriend.com/behind-the-brand/akg-microphones-evolution-of-akg-c-series
(Accessed: 08 June 2019).

Bennett, S. (2019) *Modern Records, Maverick Methods: Technology And Process In Popular Music
Record Production 1978-2000.* New York: Bloomsbury Academic.

Bruhn, C. (2019) 'Interview with Christian Bruhn'. Interviewed by Laura Drezewski for *Project
Captain Future - Production Project*, 19 May.

Cinématografe (2019) *Christian Bruhn und die Musik.* Available at: https://www.youtube.com/
watch?v=ery4bL2BM9k (Accessed: 08 June 2019).

Clark, K. (2015) *A Historical Look At Electro-voice.* Available at: http://proaudioencyclopedia.com/
a-historical-look-at-electro-voice/ (Accessed: 08 June 2019).

Clone.NL (2019) *Yuhi Ohno - Captain Future (Ost).* Available at: https://clone.nl/item32237.html
(Accessed: 08 June 2019).

Coles Electroacoustics (2019) *4038 Studio Ribbon Microphone.* Available at: http://
www.coleselectroacoustics.com/microphones/4038-studio-ribbon-microphone (Accessed: 08 June
2019).

Discogs (2019) *Christian Bruhn.* Available at: https://www.discogs.com/artist/228129-Christian-Bruhn (Accessed: 08 June 2019).

Discogs (2019) *Günther Gebauer.* Available at: https://www.discogs.com/artist/343584-G%C3%BCnther-Gebauer (Accessed: 08 June 2019).

Discogs (2019) *Kristian Schultze.* Available at: https://www.discogs.com/artist/296931-Kristian-Schultze (Accessed: 08 June 2019).

Discogs (2019) *Matts Björklund.* Available at: https://www.discogs.com/artist/52489-Mats-Bj%C3%B6rklund (Accessed: 08 June 2019).

Discogs (2019) *Todd Canedy.* Available at: https://www.discogs.com/artist/69344-Todd-Canedy (Accessed: 08 June 2019).

Dunphy,T. (2018) *Getting that 80s Sound Right: 6 Tips to Produce 80s Music.* Available at: https://www.masteringbox.com/80s-sound/ (Accessed: 08 June 2019).

Electro-Voice (2019) *RE20 Broadcast Announcer Microphone w/ Variable–D.* Available at: https://www.electrovoice.com/product.php?id=91 (Accessed: 08 June 2019).

Koulakos, F. (2010) *Percussion Frequencies Part 2 – Cymbals.* Available at: https://www.musical-u.com/learn/percussion-frequencies-part-2-cymbals/ (Accessed: 08 June 2019).

Lucas Engineering (2018) *The Lucas CS-1 Microphone!* Available at: http://www.compasspointstudios.com/lucas/cs-1.html (Accessed: 08 June 2019).

Massy, S. And Johnson, C. (2016) *Recording Unhinged: Creative & Unconventional Music Recording Techniques.* Milwaukee: Hal Leonard Books.

Owsinski, B. (2017) *The Mixing Engineer's Handbook 4th edition.* Burbank: Bobby Owsinski Media Group.

Owsinski, B. (2017) *The Recording Engineer's Handbook 4th edition.* Burbank: Bobby Owsinski Media Group.

Recordinghacks (2019) *Telefunken Elektroakustik R-F-T AK47 Mk II.* Available at: http://recordinghacks.com/microphones/Telefunken-USA/AK47-MkII (Accessed: 08 June 2019).

Roger Linn Design (2019) *Past Products Museum.* Available at: http://www.rogerlinndesign.com/past-products-museum.html (Accessed: 08 June 2019).

Rycote (2004) *Microphone Data PDF: Neumann: KM 84.* Available at: http://www.themiclocker.net/Documents/PDFs/KM84.pdf (Accessed: 08 June 2019).

Senior, M. (2016) Q. *What techniques will give me an authentic '80s sound?* Available at: https://www.soundonsound.com/sound-advice/q-what-techniques-will-give-me-authentic-80s-sound (Accessed: 08 June 2019).

Studer (n.d.) *Studer A827 - Professional Multichannel Tape Recorder.* Available at: http://umlsrt.com/wp-content/uploads/Studio%20Documents/Studer_A827_Brochure.pdf (Accessed: 08 June 2019).

Telefunken Elektroakustik (2019) *AK-47 MkII.* Available at: https://www.telefunken-elektroakustik.com/microphones/ak-47-mkii (Accessed: 08 June 2019).

Townsend, C. (2019) *Why Microphone Axis Matters.* Available at: https://townsendlabs.com/why-mic-axis-matters/ (Accessed: 08 June 2019).

Ville, J. (2017) *A trick for EQ'ing hi hats.* Available at: https://jonvilleproduction.com/2017/02/11/hi-hat-eq-trick/ (Accessed: 08 June 2019).

White, P. (2015) *The Producers Manual: All You Need To Get Pro Recordings And Mixes In The Project Studio.* 3rd end. Brighton: Sample Magic.

Appendix 1

SONG STRUCTURE BREAKDOWN "VOR DEM START"
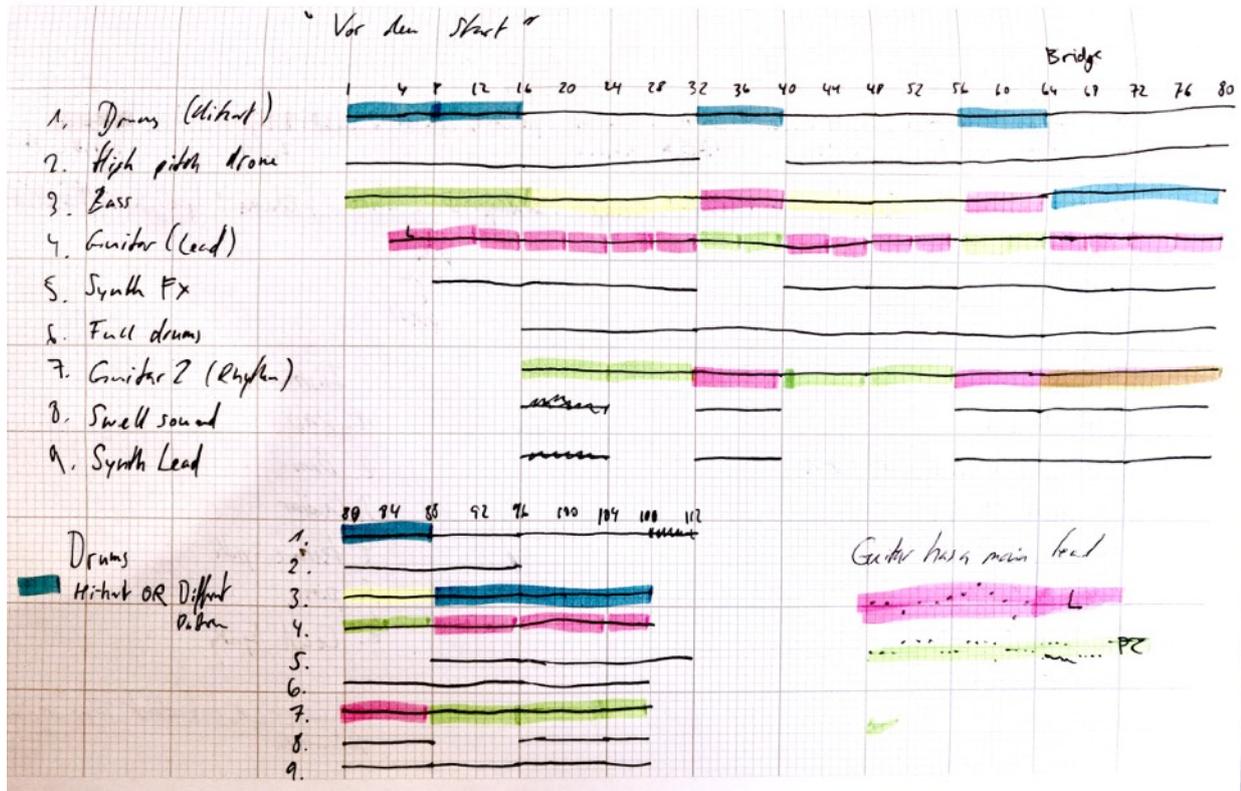
Here is the first breakdown: Bar 16 to 32 and 40 to 56 share the same pattern, as well as bar 32 to 40 and 56 to 64. The intro, bridge and outro has been kept unique.

SONG STRUCTURE BREAKDOWN "FEINDE GREIFEN AN"

Here I changed how I was writing down the sections because I recognised the repetitive patterns: "Intro, Chorus, Pre-Chorus + Section 2, Bridge, Bridge2" are identical in each section and colour labeled. In this example we have 4x the intro, 4x the chorus, 4x pre-chorus + S. 2, 2x Bridge, 2x Bridge 2. The number above the colour labels represent the bar length.

SONG STRUCTURE BREAKDOWN "GEFAHR"

Here are three different pieces of music repeated three times.

SONG STRUCTURE BREAKDOWN "KEN"
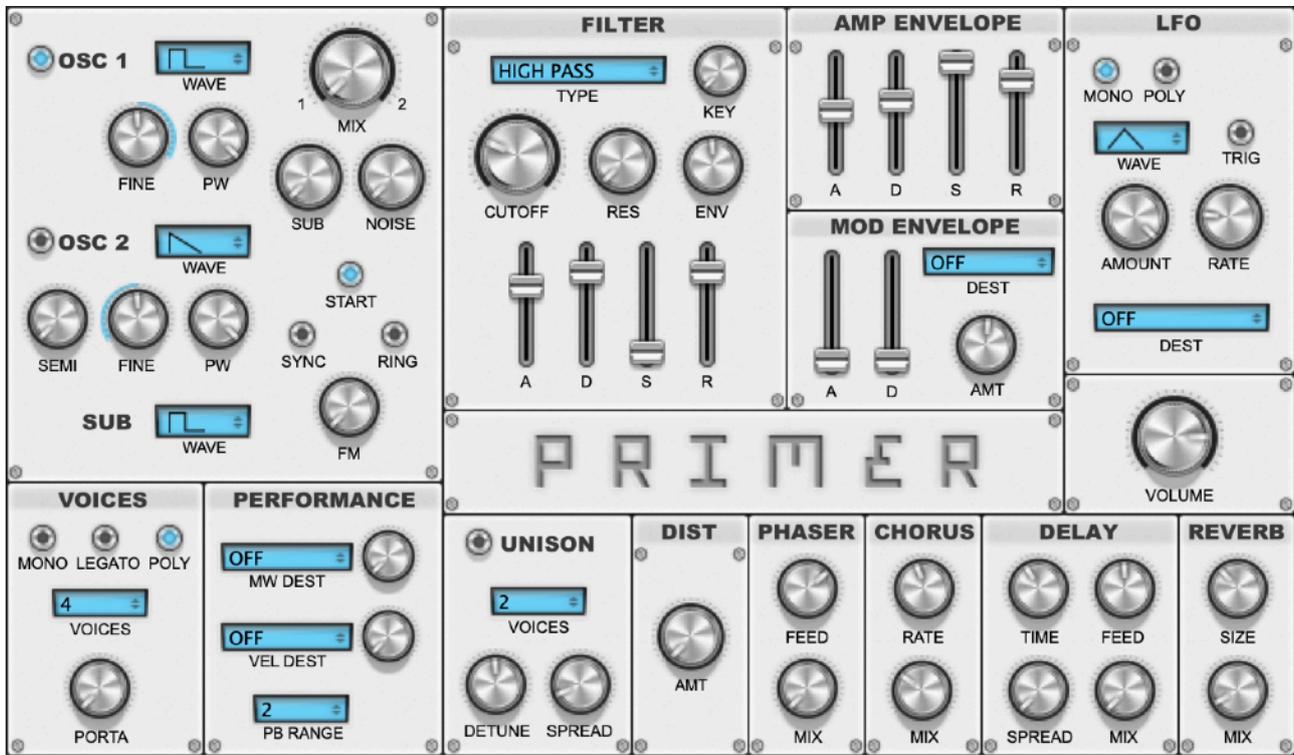

Here we see small themes with a long bridge.

Appendix 2

CREATION OF SWELL SOUND

I heard swell sounds in "Vor Dem Start" at 1:02 min. And to recreate this sound I've done the following (I'm using Primer by Syntorial for demonstration purposes):

- Oscillators: I am only using OSC1, which is set to square with a wide pulse width of 0.50.
- Voices: 4 polyphonic voices, which means that up to 4 keys can be played simultaneously
- Filter: A high-pass filter is enabled with a cutoff at 260Hz, modulated by the filter envelop that is set to 50 semi-tone and a long attack of 2500ms, decay of 5000ms, no sustain and envelop filter release of 5000ms.
- LFO1: creates the nice swell going up and down pulse when the key is pressed for a longer time. Here I selected mono and a triangle wave shape with a low rate of 1/2 and full amount of 1.
- LFO2: off.
- Amp Envelope: I set the attack to 1000ms for a slow swell, decay at 2000ms, a long sustain of 1 and long release with 5000ms.

I used the sound in "Durch Den Kosmos" from 2:14.

Appendix 3

MICROPHONES

ELECTRO-VOICE RE20
The Electro-Voice RE20 is a large diaphragm dynamic microphone with an innovation called 'variable D' (D = distance) to reduce proximity effect. The microphone was initially the standard for broadcasting and later it was utilised in low frequency recordings such as the kick drum, where its technology rejects the excessive bass-boosted proximity effect. The microphone can be place very close to a sound source and it will retain definition and clarity. The variable D technology was first developed in 1953 and the RE20 series of microphones were launched in 1968. It has a frequency response of 45 Hz - 18,000 Hz and it can be used inside a bass drum, for cellos, vocals, acoustic guitars and other challenging instruments.
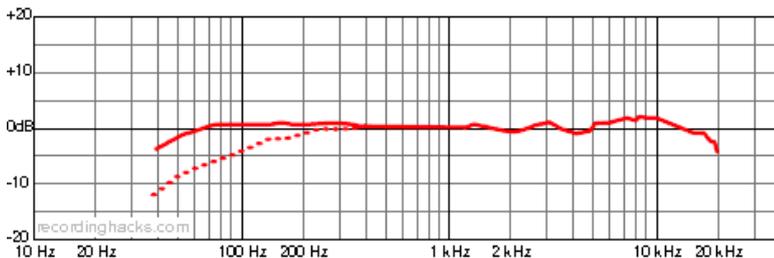

SM57
The Shure SM57 is a cardioid dynamic microphone, it was first introduced in 1965 and is known for its capability to take high SPL levels without distorting the signal. It's therefore widely used in live sound and recording, especially on snares and guitar amplifiers. The microphone has a high durability, it has a frequency response of 40Hz-15kHz and a clear sound with a uniform cardio polar pattern to minimise feedback.
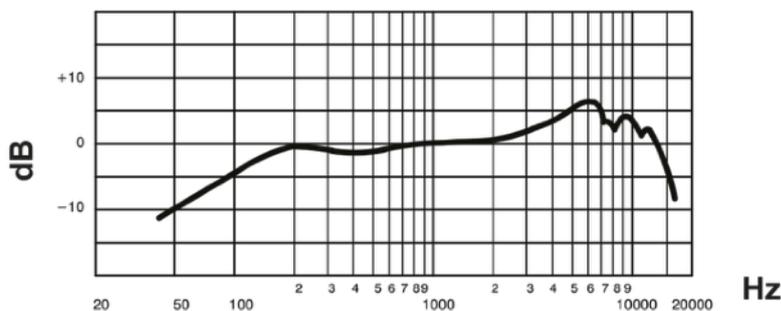
I found that the SM57 was a bit too bright for my taste / not suitable for the snare top.

NEUMANN KM84
The Neumann KM84 is a small diaphragm cardioid microphone, introduced in 1966 it was the first 48 Volt Phantom-powered microphone. Being one of the earlier FET (field-effect transistor) mics, it's one of Neumann best selling microphones with cardioid characteristic that contains the KM64 capsule. The microphone is known for having an exceptional sound for acoustic instruments and drum overheads, it was discontinued in 1992. The frequency response is 40Hz - 20kHz and it's not as bright as other microphones, which is good for recording the snare top.
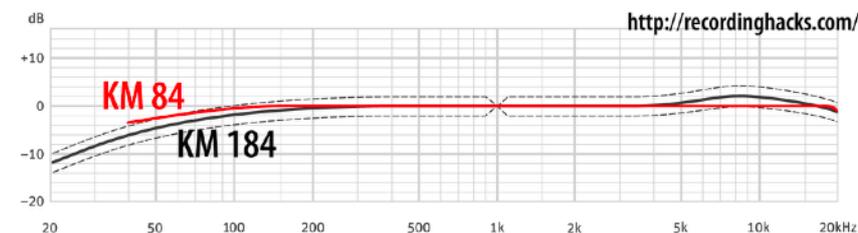

KM stands for 'kleines mikrofon' (German) = 'small microphone'.

I really like the sound of the KM84 so I used this for the snare and the guitar amp.

SENNHEISER MD421
The Sennheiser MD421 is a large diaphragm cardioid dynamic microphone, introduced in 1960 and designed for the broadcasting industry in Germany. The frequency response is 30 Hz to 17 kHz with a brightness boost at around 4-5 kHz making it ideal for speech and vocals, but this microphone is considered as a general purpose tool which sounds also great on drums, brass and guitar.
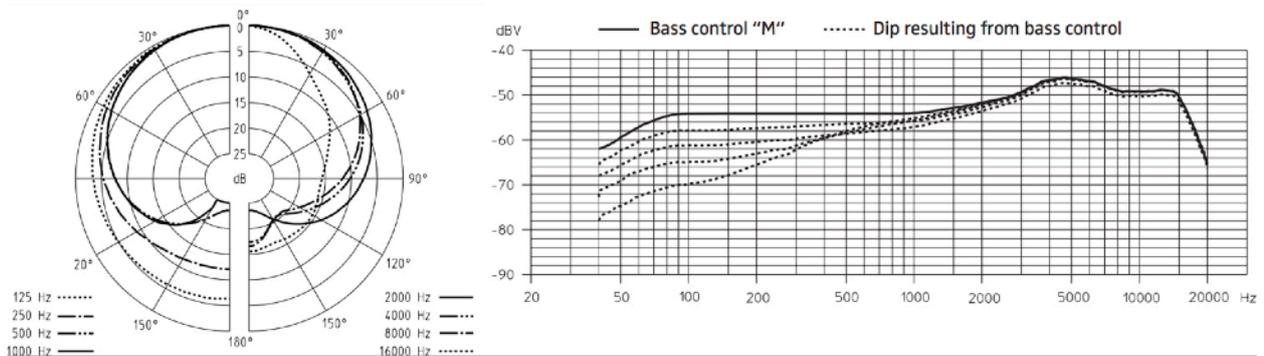

SONTRONICS STC-1
The Sontronics STC-1 is a small-diaphragm cardioid condenser microphone, with no information of the build year nor wikipedia entry. Sontronics is a UK based company and was launched in 2005 by founder Trevor Coley. The frequency response is 25Hz-20kHz according to their website. The chart below shows a graduate declination from 10kHz.
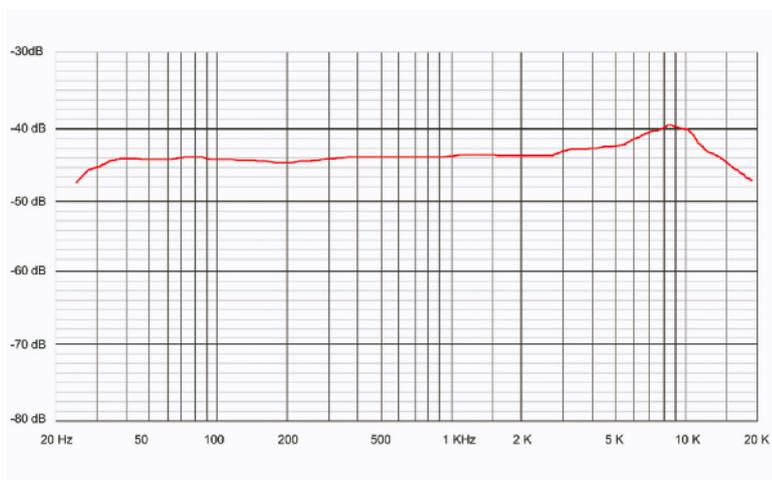
Comment: This mic was used on the hi-hats and I didn't like the sound particularly as it couldn't record much "air" from the cymbals. The air on the hi-hat starts around 17kHz.

COLES 4038

The Coles 4038 is a ribbon microphone designed by BBC and manufactured by STC, introduced in 1952. It's often used for drum overhead or brass recording. Coles bought the rights from STC in 1974. The frequency response for this microphone is 30Hz - 15kHz.
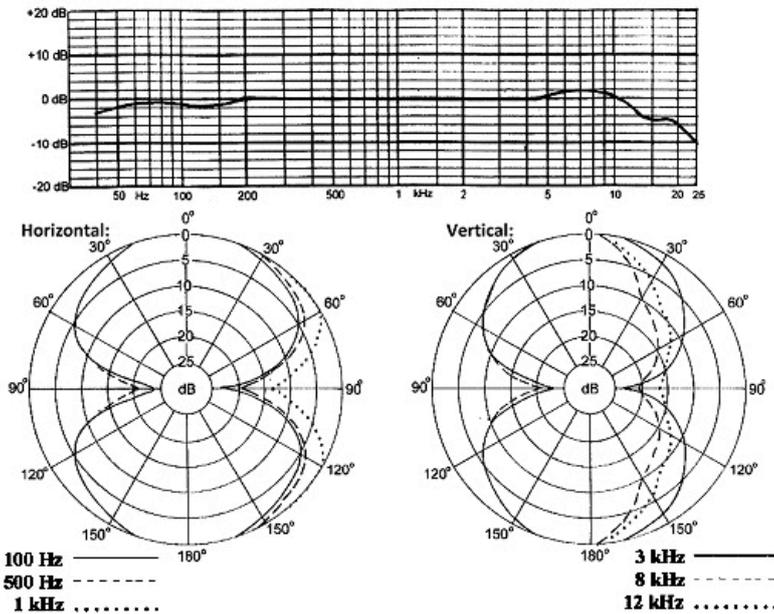
AKG 414

The AKG 414 is a large diaphragm condenser microphone with multi-pattern, introduced in 1971. It is famous for its CK12 capsule, which was introduced in 1953. The frequency response is 20Hz - 20kHz.
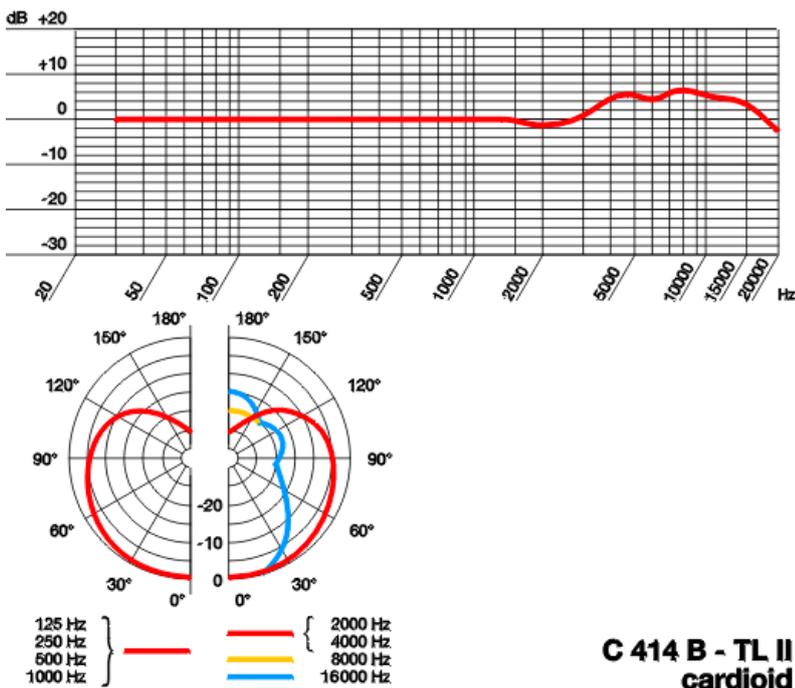
TELEFUNKEN AK-47
The Telefunken AK-47 MkII released in 2010, is a large diaphragm multi-pattern tube condenser microphone, a cross of the historic M49 and U47 which was introduced in 1947. The frequency response is 20Hz - 20kHz.
Telefunken GmbH was a German manufacturer which was acquired by Toni Fishman in 2000, now known as Telefunken Electroakustiks, based in the USA.
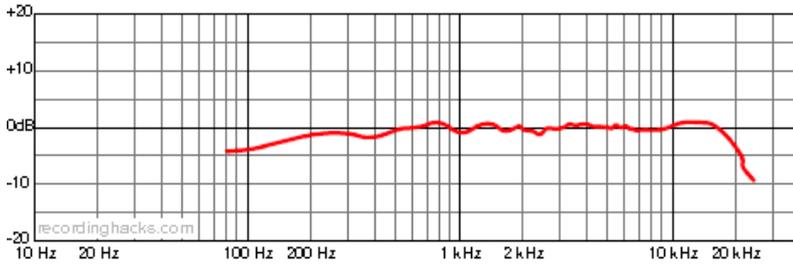
Appendix 4

GUITAR, BASS AND DRUMS RECORDINGS

Amplifiers
Figure 2: Amplifier selection. The VOX had a harsh brightness to it, the Orange was too crunchy sounding, the Marshall was lacking brightness with too much mid-range and the Soundcity 20C sounded too modern.

Figure 2

RE20 inside the kick with pillow

Microphone setup

Using tea towels to dampen

Appendix 5

COMPING

Below are the notes I took for the drum comping, these are my own methods. The tick means good, the x is bad. Sometimes I add a "s" when something was very good.

TRACK #4 - DRUM COMPING — S = SUPER GOOD

MIKE
2x

	INTRO	PRE-CHORUS	CHORUS A	CHORUS B	BRIDGE A	BRIDGE B
TAKE 1:	✓ ✓	✓	✓	✓ ✗	✓ ✓	✓	✓
TAKE 2:	✓ ✓	✓	✓s	✓ ✓	✗ ✓	✗	✓

CARL
TAKE 1:	✗ ✗	✓ ✓	✗ ✗✓	✗ ✗✓	✓	✗
TAKE 2:	✓ ✗	✗ ✓	✓s ✗✗	✓s ✗✗	✗	✗
TAKE 3:	✗ ✗	✓ ✓	✓ ✓	✗ ✗	✗	✗

DARYL
| TAKE 1: | ✗ ✗ | ✗ ✗ | ✗ ✗ | ✓ ✓ | ✗ | ✗ |
| TAKE 2: | ✓ | ✓ | ✓ | ✓ ✓ | ✗ | ✗ |

TRACK #3 - COMPING

MIKE
2x

	INTRO	CHORUS A	VERSE	CHORUS B	PRE-CHORUS	BRIDGE A	BRIDGE B
TAKE 1:	✓	✓ ✓✗	✓✓	✓✗✓	✓·✓✓	✓✓	✓
TAKE 2:	✓	✗✓✓	✓✗✓	✗✓✗	✓✓✗		✓

CARL
TAKE 1:	✗	✗✓✓	✗✗✗	✗✓✗	✗✓✗	✓✗	✗ ✗
TAKE 2:	✗	✗✓✓	✗✗✗	✓✓✗	✗✗✗	✗✓	✓✗
TAKE 3:	✗	✗✓✓	✗✓✗	✗✗✗	✓✗✓	✓✗	✗✗✓
TAKE 4:	✗	✓✓✓	✓✗✓	✓✗✗	✗✓✓	✗✗	✓✓

DARYL:
| TAKE 1: | ✓ | ✗✗✗ | ✗✓✗ | ✓✓✓ | ✓✗✓ | ✓✓ | ✓✓ |

Carl - can hear a bit of insecurity on the drum

TRACK #2 – COMPING S= Super Good

MIKE

	INTRO	CHORUS	VERSE A	VERSE B	BRIDGE A	BRIDGE B
TAKE 1:	✓✗ ✓✗ ✗ ✓✓✓	✓✗	✗✓	✓✓	✓✓	
TAKE 2:	✗ ✓✓✗ ✓✓ₛ✗✗	✓✗	✓✓	✓✓	✗✓	

CARL

	INTRO	CHORUS	VERSE A	VERSE B	BRIDGE A	BRIDGE B
TAKE 1:	✓ₛ✗✗✗ ✗✗✓✗ ✗✗	✗✗	✗✓	✗✓		
TAKE 2:	✓ₛ✗✗✗ ✗✓✗✗ ✓ₛ✗	✗✗	✗✗	✗✗		
Take 3:	✓✓ₛ✗✗ ✗✓ₛ✗✗ ✓✓ₛ	✗✓	✓✓	✗✓		
Take 4:	✓✗✗✗ ✗✗✗✗ ✓✗	✗✗	✗✗	✓✗		

Daryl

	INTRO	CHORUS	VERSE A	VERSE B	BRIDGE A	BRIDGE B
Take 1:	✓✓✗✓ ✗✓✗✓ ✓✓ₛ	✓✗	✗✓	✗✗		
Take 2:	✓✓✓✗ ✗✓✓✓ ✓✓	✓✗	✗✓	✗✗		

TRACK #1 – COMPING

MIKE

	INTRO	VERSE	PRE-CHORUS	BRIDGE A	BRIDGE B	OUTRO
TAKE 1:	✗	✗✗	✗✓	✗	✗	✓
TAKE 2:	✓	✓✗	✓✗	✓	✗	✗
TAKE 3:	✗	✗✗	✓✓	✗	✓	✓

Carl

	INTRO	VERSE	PRE-CHORUS	BRIDGE A	BRIDGE B	OUTRO
Take 1:	✗	✗✗	✗✗	✗	✗	✓
Take 2:	✗	✗✗	✗✗	✗	✗	✓
Take 3:	✗	✗✗	✗✗	✗	✗	✓

Appendix 6

PRODUCTION PROJECT SURVEY

Have you ever watched the anime Captain Future (1979)?

65 responses

- Yes
- No

67.7%

32.3%
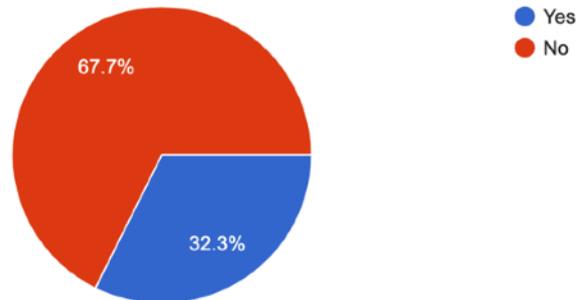
Have a listen to this music now. Comparing with the first video and on a scale from 1 - 5, does the music give you the 1980's Captain Future vibe?
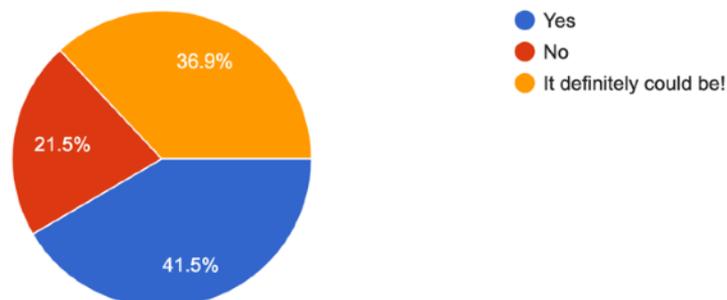
65 responses
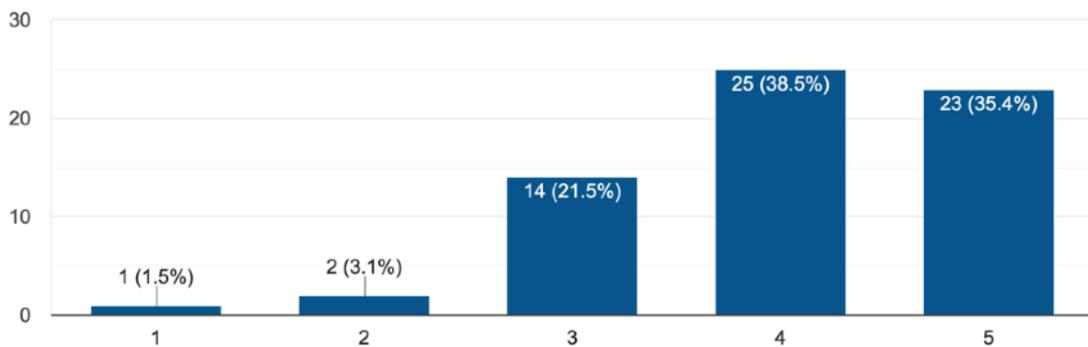
1 = Strongly Disagree, 5 = Strongly Agree

Does the music sound like it was produced in the late 1970s / early 1980s?

65 responses

- Yes
- No
- It definitely could be!

36.9%

21.5%

41.5%

IF THERE ARE ANY DIFFERENCES, WHAT DIFFERENCE CAN YOU TELL BETWEEN THE TWO VIDEOS?

65 responses

The second one is very clean snd modern.

The production quality is a lot cleaner which I think makes it sounds more modern than the original.

No difference

different drum sound

The drums sound more up tempo in the second video and there was a lot of funky distortion from the guitar that gives it the retro feel.

Idk, the second one is a little bit funkier

Video 2 had less of a Disco vibe to it, than video 1 had.

The second sounds more fresh like an extended version (more groove inside) of instruments, the first sounds more simple

The 2nd video was more layered and had more movement.

Video 2 sounds a little darker. The electronic vibe to it has the bones of the first video, but the overall sound is more ominous. I like it, its just slightly different.

To me the original sounded more like funk, like the second one is still mostly funk, but it has some other elements that I personally think are nice as well, but adds a slightly more futuristic feel, if that makes sense? The second one sounds like it has some distance as well(in a good way) while the original felt very much close to you sonically.

Faster in second video

I sounds to clean compared with the sound of the first video.

I´m no musician, I can´t quite tell the differences. It sounds like it could be from the 80s, but I also do know, that it´s not. so..

The new sounds like a synthesis of all music that was created for captain future. Also sounds less experimental and less psychadelic.

The second one is groovy and more upbeat.

Drums heavier in 2nd, bass in 1sr more 70's

-

The mixing isn't precise. It doesn't sound like ONE Song. There are layers of music. But it's not whole - to this point. But The quality is pretty good.

The melody is also not precise enough. There are too many different things going on. You need a strong lead melody that is pushed by the harmonics in the background.

Video 2 sounds more towards funk. Video 1 is more synth disco

The bass line of the first video had more of a 70s soul feel.

The second one sounded more funky

The soundtrack in video 2 is a more 'modern' take on the general theme I feel, although it still conveys the overall content of the accompanying video. I feel that the second track is a

better fit although it does not convey the "this is the future" feeling that perhaps the video 1 soundtrack tries to suggest.

Can't say. I love the original. But this sounds quite good too.

Snare sound / guitar sounds more like "funk" in the first one / bass sound is more present in the first one and more "slappy"

Music sounds more modern and extended by more background sound compared to first video.

The second is more upbeat and the sound quality is more crisp. More texture instrumental wise.

New sounds cleaner.

Sounds more hi-fi in video 2 (probably digital recording?)

The second Video sounds a little Bit to smooth and the keyboardsound is too dominant

Maybe the first video has less low end

Later one has a more upbeat tempo and less 70s feel

More bass and drums in this version

The second musical piece was more cohesive with the mood of the Captain Future ideals. It was also more clean and reflected the video's animation.

2nd video is more modern vibe

2nd video is more upbeat and sounds live. The drums are not too processed.

2nd one feels more exciting

The first one is very funky and groovy, kind of Beverly Hills cop. I like the bass in the second one. It feels more heroic and positive even though the the music is more mellow. The second one reminds me more of traditional 80's cartoons.

No difference

Tempo is a bit more quicker

Definition

More upbeat and a bit faster and modern than the first one

More happening in 2nd video

It's fresher. I like the sound

The new one sounds more adventurous

Number 2 is clearer and more upbeat

Bass less prominent in video 2, video 2 sounds like might have more reverb, video 2 seems less funk

Vid 1 had more natural groove and feel to it. Vid2 sounded like it was trying to be like Vid1 but without the deeper understanding of where the music came from. Some elements were reproduced reasonably closely like the guitar sound and style but it wasn't coming from the same overall place.

very clean sound

The bass sequence in the beginning doesn't sound like 80s. The music in the second video somehow reminds me of Daft Punk

there was no base under the old song, and was more funky?? (upbeat)

I think the two videos sound very similar

A little less funky. Reminds me a little of Daft Punk "Random Acess Memory" whereas the first one was a bit more funky, chill kind of.

the first version is much longer and appears to tell a more comprehensive story - many different themes and parts of the song (which might be more typical for compositions of the 70s in general)

on the other hand, version two seems to be a suitable 21st Century version; short, crisp, climax is reached quicker...

Very similar quality. As upbeat as the first video/soundtrack.

slightly less funky but close - and still sounds authentic!

Mitging

The second one sounds a bit flat and tinny in comparison

More electronic sounds

Groovy

More instruments in video two, definitely more upbeat, gets the song going quicker than video one (if that makes any sense) like it gets to the groovy part much quicker which I like. It sounds a bit more modern, similar to something from Two Door Cinema Club. It has that modern retro sound.

Cannot really tell the difference

Version 1 had a more cold, 80s vibe to it. Version 2 feels much more modern, especially with the guitar and synth effects. The bass on 2 is mixed much lower, and isn't as much of a driving melodic force as it is in the first one.

The brighter synth in video 2 reads more 90s in a television context. The synth use is reminiscent of an 80s "space" feel a la Horizons or other theme park rides, but the first video really relied more heavily on a guitar groove to sustain itself and felt much more 70s than 80s on the back end. The 2nd video does a good job of trying to mimic the compression on a more analog track, but at the end of the day there's really no digital recording that will sound as dirty.
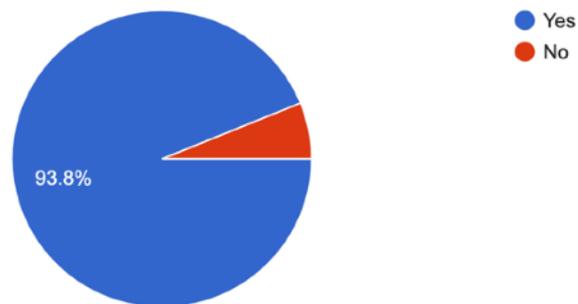
Faster tempo in the second more upbeat

Do you think the 2nd video would musically fit with the Captain Future soundtrack?
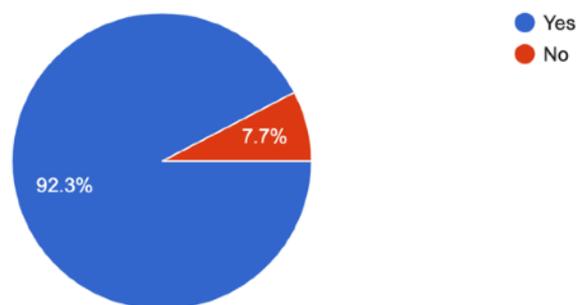
65 responses

- Yes
- No

93.8%
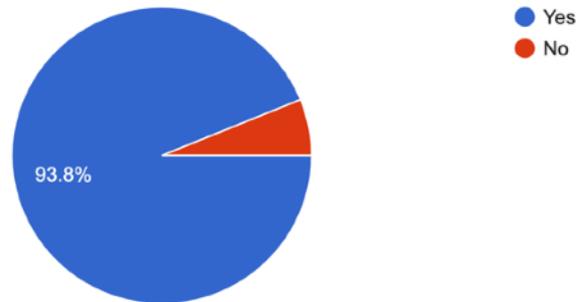
Do you think that the instrumentation (synthesizer, guitar, drums etc.) and overall sound quality resembles the Captain Future soundtrack?
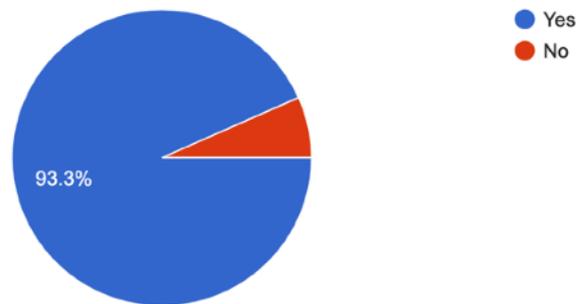
65 responses

- Yes
- No

93.8%

Would you like to hear more music examples?

65 responses

- Yes
- No

92.3%   7.7%

Did you have a listen to all of them?

60 responses

- Yes
- No

93.3%

Was there a particular song that you really like?

Tracks

56 responses

I LIKE ALL OF THEM!	29 (51.8%)
Durch Den Kosmos	8 (14.3%)
Die Drei Sterne	14 (25%)
Unbekanntes Territorium	13 (23.2%)
Auf Dem Weg Zur Erde	5 (8.9%)
Not really!	2 (3.6%)
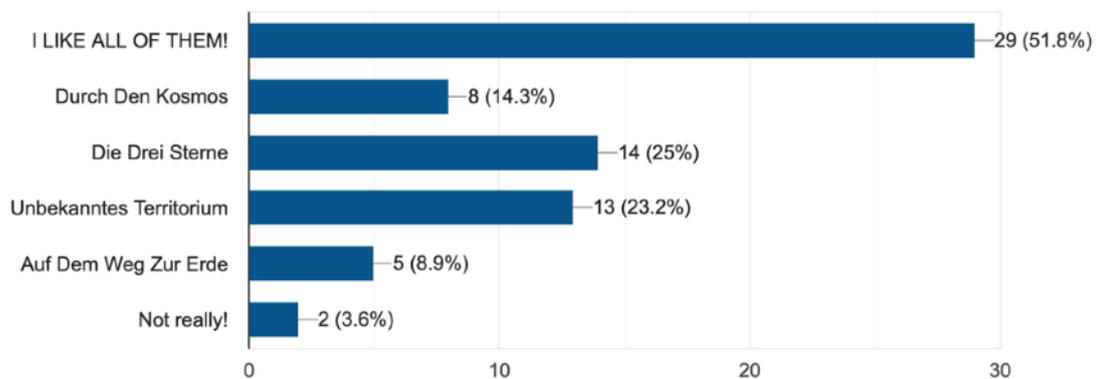
WHAT'S GOOD ABOUT THE SONG(S)?

56 responses

Its got more guitar and it sounds the closest to the original.

They are extremely well produced as well as funky and upbeat! Very fitting for the theme of the cartoon. The music also fit well with the time period it was made to emulate.

Funky 70's sound

catchy!

Not only do they have a classic retro feel, but they're fun and command attention. There isn't really a way to feel bored or distracted when your attention is drawn in by fun music.

I just liked the beat and tempo, it was uplifting and fun.

They have a very retro funk vibe. Definitely embodies the mood of a classic anime.

This one fits the 80s theme the best imho.

I really like the funky drive they have, and in unbekannst territorium I really like the controlled dissonance, it's really well-made!!

Liked the beat

They sound like they could be in some Captain Future ost maybe like "unreleased soundtrack"

Fresh new take to the theme and still reinvoking nostalgia

It brings me in a good mood. It´s easy, but still...

Bass and sounds authentic and fits animation

I like them, really! But again - there is no strong melody that will stay in the listeners head. It sound really, really good. But it's all the same

It has a sort of feel good Duran Duran flavor that I remember as a kid.

Sounded very 70's

Whilst I find the music listenable there does not seem to be enough variation within the 3 tracks to make me think that the music would be able to match, interpret and convey a diversity of different visual themes.

The sounds are kept in the style of the 80s.

Overall groove / overall rythm / synth and prod

Nice melody arranged with fitting instruments

It's exciting (not that the others weren't) I really like the repeated guitar riff as it sticks in your mind and builds anticipation. And I also really like the twinkly synth in the background (not the most eloquent explanation I know😂)

Funky, atmospheric, catchy and nicely balanced.

When i listen i got the Future Vibe.

They are really funky and there's a lot of groove

Felt the suspense in the air , through music

They fit the same genre

It works well with the scenes.

They have a good retro 70s dance disco beat along with interesting melodys slightly more modern new wave,

They have an authentic feeling to them. They sound well thought through and the mix is great!

I just personally like them and it is really suitable to the Video.

The song sounds heroic and and has a positive feel good feeling. It has nostalgia and reminds me of cartoons from my childhood. It goes very well with the video.

The flow in the mucis is good

Similar to original anime. Good pace to the beat. Very chilled.

Interesting

The best and the instrumentos, the rythm also, good vibes

Retro future sounding

The sound

You feel the vibe! Even without watching the videos you get the feeling of a retro but still modern space adventure!

Bit darker/more melodic

70's / 80's funk prog - what's not to like!

These guys were trying to sound futuristic with the latest technology and you can tell they weren't embaresed to just play with it and get stuff down cause they were enjoying it.

They're all cohesive, good clean sound and good synths choice

They definatley have a Captain Future vibe!

nice groove

they are very groovy!

I like the vibe of the tracks. Groovy but not over the top when blended with the source material which is good

All great dance tracks. They all go well with the animation. Very fitting. After a few plays the stay in your head! They sound great!

great vibe, funky, authentic retro sounds

The feeling u get when listening to it

Funky, groovy, old school, Nile Rogers like

A lot more instruments in the background

They are upbeat and modern. I felt the other two were trying to be modern but fell short. They would be cool instrumentals for background music, but I think that the songs I liked should be main features of the show.

The songs are nice and groovy. When I listen to them I think of captain future.

They do have a cool vibe, and the production is good, they just don't fit the vibe they're trying to mimic.

Keeping the bass and guitar as the driving force and the occasional drops into minor really help push the groove forward rather than just floating around in the loose synth space.
synth groove tempo

IN YOUR OPINION, IS THERE ANYTHING THAT COULD BE IMPROVED?
56 responses

No
It works. Drums could be slightly louder but its still very good.
Maybe a little more variation in the guitars but nothing drastic.
drum sound
They're all very fast tempo, which is the style and genre, but I'm curious to hear a slower tempo song sample. Just for the sake of it existing. Lol
It's a short clip, but, a little more variety in the music .
Not offhand. They sound great for the material they are being used for!
Make sure and include plenty of those funky bass slaps ala Duran Duran. That is quintessential 80s.
No! I think it's amazing as it is! I really like it anyways!
Hum dont know to be honest
not really
There was a certain quality to the original, some synthesizer sounds, that are hard to describe, that are missing and could be added for a full Captain Future nostalgia feeling
More instruments would be nice. And it could be a bit faster.
Lighter drums (just slightly overpowering)
Like I said. Strong melody...
Depending on the vibe you are going for and time (70s 80s 90s , beyond), production can always be manipulated more to get the desired affect. I don't know if I would say it needs to be "improved". Just possibly changed depending on what you are trying to achieve. I believe all music can be improved upon or changed for the better,, even music that has been finalized for 50 years.
It's hard to say, they are very good for background/atmospheric music, it would depend on how you wanted to use them
Match the soundtrack to the visual storyboard rather than just having a 'flat-line'. The soundtrack should also tell the story. Think back to the days of silent movies, when a person sat at a piano in the cinema and conveyed the story and its emotions and visuals while the silent movie played.
Can't tell. When I listen to music I like it or don't like it. And I like this.
I like like it is !

Maybe adding vocals

No I think the music fits the animation perfectly as the plethora of synths really create that "space" vibe which is certainly reflective of the animation. The funk/funky elements really suite the style of animation too even if the music isn't meant to necessarily fit the each of the specific scenes shown.

no

I Miss a Little Bit the Ruffness from the Original Future Sound

Yes, the bass player could have done more from a melodic perspective, because sometimes it repeats the same groove and it can become a bit repetitive

Slower pace , more at different intervals , to build more depth

Nope.

Maybe the drums need to be funkied up a bit,maybe more modern, and /or try to bring in more disco songs like on the single " funky town" which where popular in the late 70,s fuse with late 70s new wave maybe

Not really, it's great as is. Maybe some percussion to give a different feel, however that would take away from the resemblance to original Captain Future tracks.

There are some small adjustments that Needs to be Done and then this could be the OST Of Captain Future

Some of the used Instruments Sounds kinda „weak"

Nothing so far

No.

Clarity

Infelt they sound quite simmilar

Not sure sorry

Maybe a little bit more sound from the original

No, couldn't tell, I think it's done perfect!

More crazy space sounds! All seem in keeping with original track though and like them all

No - because those tracks are of a time and style. To change them would be to pull them out of their time and style.

Probably mixing it to the 70's 80's sound

vocals?

I think they all sound very good

Probably the mix. If it could somehow emulate that old school feel. And composition wise, maybe add or even takeaway something to really let the audience feel the rhythmic parts

From a musical stand point, a little depth with drums...especially the bass drum...to create more of a 'dance' pulse. Otherwise, all good!

the production could sound a little "older", but thats just a detail

I dont know im Not very musical

Try and make it less flat, governor more „space"

Don't think so

I did not like the first one of the three more that I watched. (I'm sorry I can't remember the German name for it, it was the one before die strede). I thought it was too computer sounding. It did not necessarily connect with the art of the anime or the other songs. It felt separate from the others. Maybe more synth is needed.

No suggestions

Less synthesizers, more bass. 70s/80s funk was produced in a very dry way, generally keeping the bass as one of the lead instruments, whereas all of the synthesizers on these tracks are too wet, and make it feel more early 2000s than a throwback.

Keep it simple. Let the show speak for itself with its visuals. If we noticed the music then it's too distracting.

No

Comparing the music with video 1 in the beginning, everything I listened to sounds like it was done by the same composer
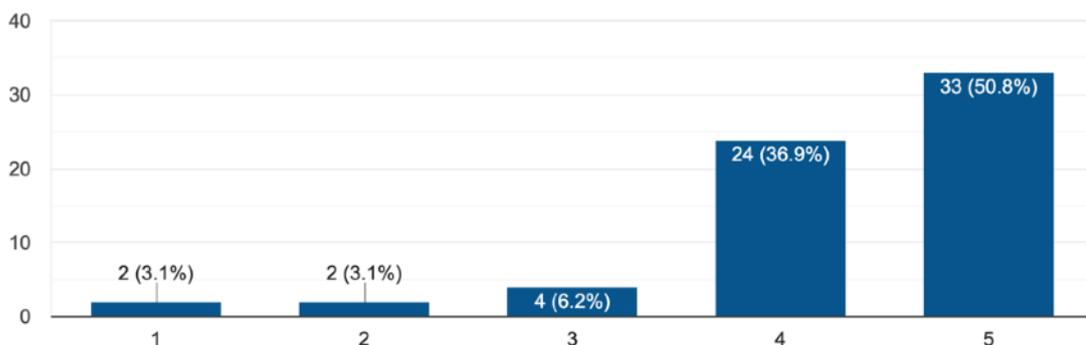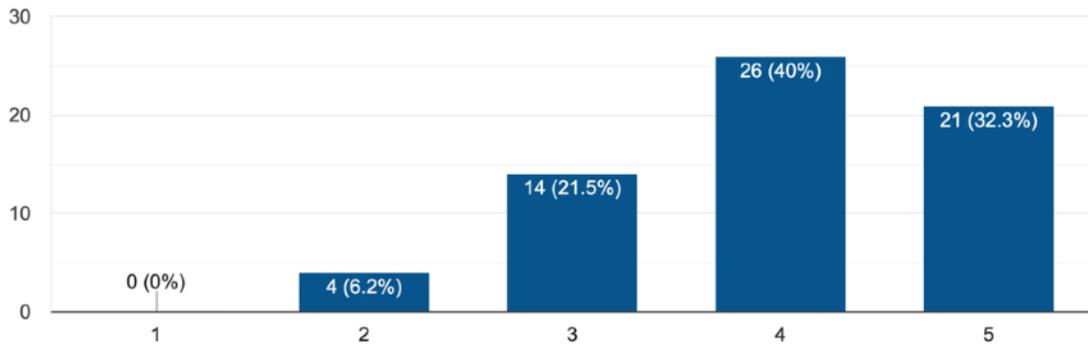65 responses
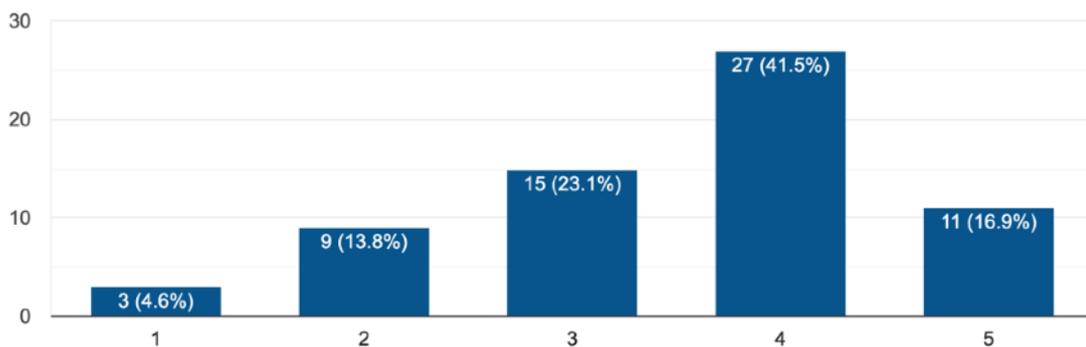
1 = Strongly Disagree, 5 = Strongly Agree

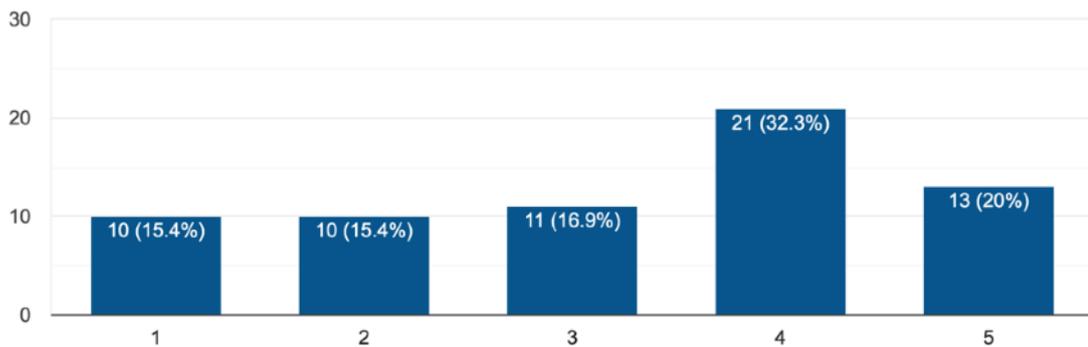## Comparing the music with video 1, they have a very similar musical style
65 responses

Comparing the music with video 1, they share the same musical instruments
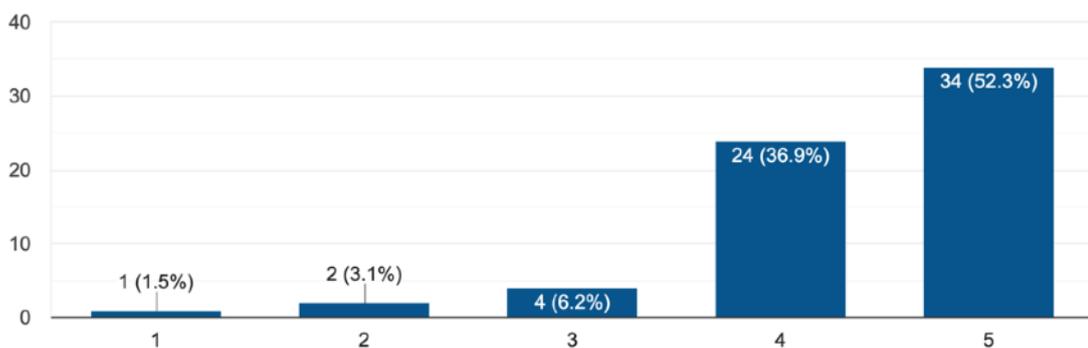
65 responses

Value	Count
1	0 (0%)
2	4 (6.2%)
3	14 (21.5%)
4	26 (40%)
5	21 (32.3%)

Comparing the music with video 1, they sound like they were produced in the same studio

65 responses

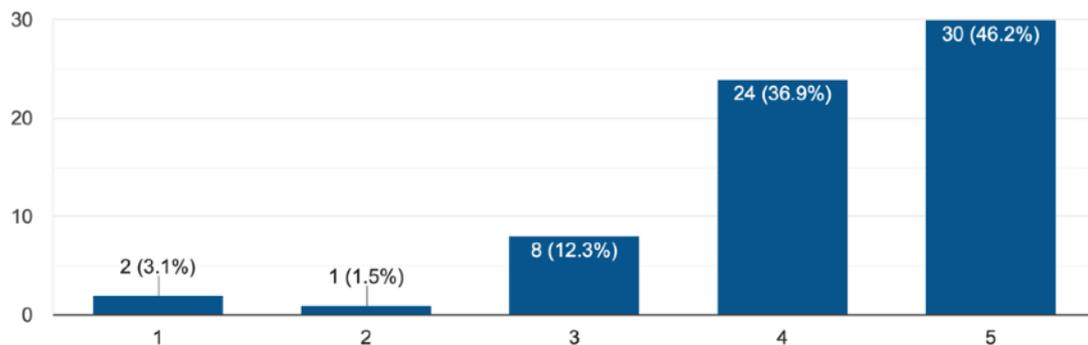| Value	Count
1	10 (15.4%)
2	10 (15.4%)
3	11 (16.9%)
4	21 (32.3%)
5	13 (20%)

On a scale from 1 - 5, can you see the music (from video 2 and the example section) on a new Captain Future Soundtrack?

65 responses

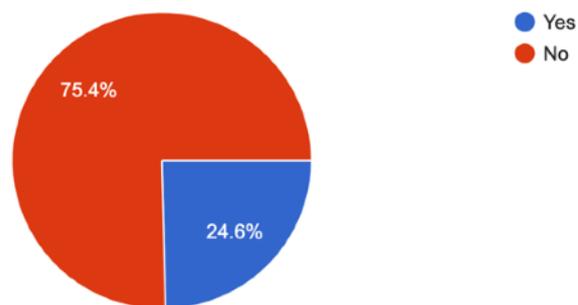| Value	Count
1	1 (1.5%)
2	2 (3.1%)
3	4 (6.2%)
4	24 (36.9%)
5	34 (52.3%)

On a scale of 1 - 5, does the music in comparison to the original (video 1), evoke the same thoughts and emotions?

65 responses

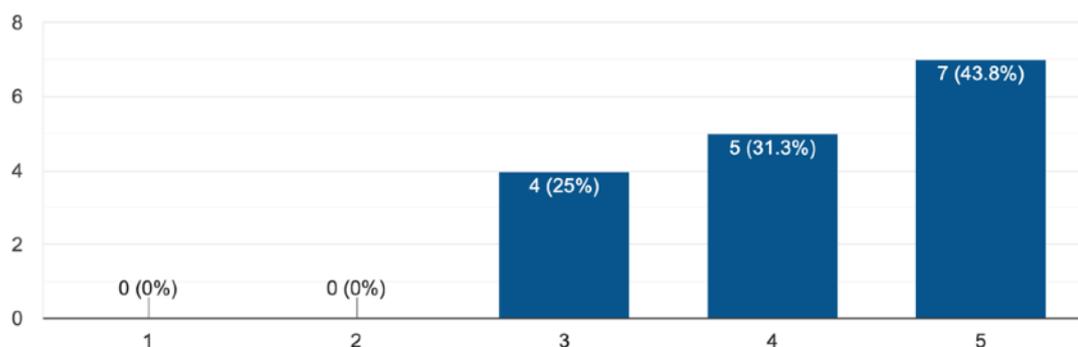## Are you a music producer or sound engineer?

65 responses

- Yes
- No

75.4%

24.6%

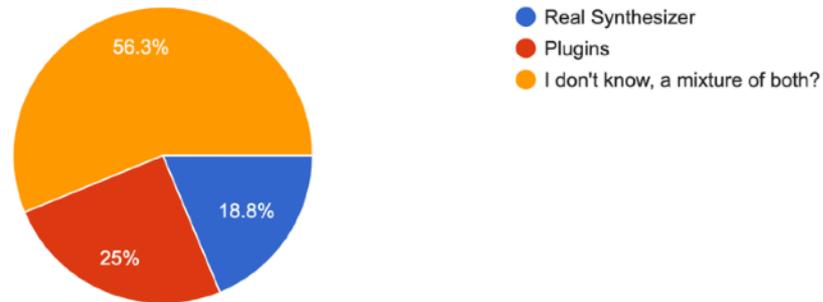# Just for the Music Producers and Sound Engineers

In your opinion and on a scale from 1-5, how do you find the mix aesthetics?

16 responses

In your opinion, do the songs sound they were made with real synthesizers or plugins?
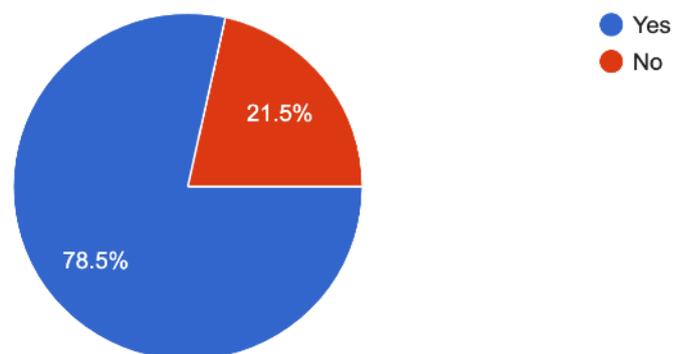
16 responses

- Real Synthesizer
- Plugins
- I don't know, a mixture of both?

56.3%

25%

18.8%

Thank you!

Would you like a digital copy of the Project Captain Future EP for free?

65 responses

- Yes
- No

21.5%

78.5%

Appendix 7

Interviews

INTERVIEW WITH CHRISTIAN BRUHN

1. When did you start the CF production and how long did it take you to make the album?

   CB: June 1980 - 2 days base recordings, approx. 1 weeks overdubs, approx. 3 weeks tailoring for the anime and single-special-takes (only me on the synth) i.e. „Der einsame König"

2. What console did you use and how many channels did you have at the time?

   CB: CADAC, 48 channels, Studer 24-channel

3. What compressor did you use on which instruments?

   CB: to mix: UREI

4. What gave you the idea of using synthesizers after hearing the Japanese music version that resembles Love Boat? CB: I never heard the original music. I use synths since the first Mini-Moog.

5. Did you only use 3 synths in or are there any others?

   CB: Prophet V, Jupiter IV, Mini-Moog, Kristian Schultze & Me

6. Did you create all the synth patches yourself from scratch or did you use or modified any presets?

   CB: the latter.

7. In 'Neue Erfahrungen Im Cyberspace" the drums sound very electronic. Is this the Roland CompuRhythm CR-78 or any other model?

   CB: Linn Drums or Alesis D4*

8. How did you record the drums to make them sound tight and what reverb did you use?

   CB: It's because of the microphone and the saturation. Lexicon Hall.

9. Was the production done in your studio in Munich, Germany?

   CB: Yes.

10. Did you use automation at the time of the CF production?

    CB: No.

11. Do you mix everything in sub-groups?

    CB: No.

12. Which instruments did you record in stereo?

    CB: Piano, FenderRhodes, Drum Overheads

13. Did you direct the session musicians or are they trusted friends who came up with ideas?

    CB: Most of the notation was fixed, but they contributed with licks.

14. When you recorded, were the recordings all life performances or did you do some splicing?

    CB: All live onto the Studer 24-Channel

15. Did you use a tape machine? If yes, which one and at what speed?

    CB: Everything was recorded on the Studer 24-Channel with 38.5cm/s (15IPS), the piano arpeggio in the main theme with half speed

16. Having a cult following, have you ever considered making a follow up album?

    CB: How should it work? All the music is on the first album.

17. What year did you start using midi / a computer to make music?

    Beginning 80's Linn Drum computer and sequencer (Linn 900) mid 80s, Atari, then Notator and since then Logic.

*Alesis D4 didn't exist in 1980. Alesis was first introduced in 1985.

Appendix 8

CREDITS (ORIGINAL GERMAN VERSION OST)

Bass	Günther Gebauer
Drums	Todd Canedy
Guitars	Mats Björklund
Keyboards	Christian Bruhn, Kristian Schulze

Producer, Composed By, Conductor, Recorded By, Mixed By – Christian Bruhn

Christian Bruhn

Real Name:	Hans Christian Bruhn
Profile:	German composer and music producer, born 17 October 1934 in Wentorf near Hamburg, Germany. Chief of the German music collecting society GEMA from 1991 to 2009. President of CISAC (umbrella organisation of copyright societies).
	He is the father of Johannes Bruhn and was married to Charlotte Marian, Katja Ebstein (1972-1976) and Erika Bruhn (1976-2001).
Sites:	christianbruhn.de, MySpace, Wikipedia

More Images

Kristian Schultze

Real Name:	Kristian Wladimir Schultze
Profile:	German pianist, arranger and composer born 21 January 1945 in Frankfurt/Oder, Germany, raised in Hamburg, died 22 November 2011 in Bad Tölz, Germany.
Sites:	kristianschultze.de, Wikipedia
Aliases:	Kaschu
In Groups:	Bundesverwaltungsorchester, Curt Cress Clan, Cusco, Das Waldemar Wunderbar Syndikat, Kristian Schultze Set, Niagara, Passport (2), Snowball (2), The Bridge (20), The Lenny Mac Dowell Project, Utopia (16), VOX (3)

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Todd Canedy

Real Name:	Donald Todd Canedy
Profile:	American jazz musician (drummer), studio musician, multi-instrumentalist and songwriter. He worked in Europe in the 1970's and 80's.
	Born November 26, 1952
	Died December 15, 2015

Günther Gebauer

Real Name:	Günther Gebauer
Profile:	German bassist, arranger, producer.
In Groups:	Frank Duval & Orchestra, Hans Ehrlinger And His Orchestra, La Belle Epoque (2), Orchester Etienne Cap, Orchester Heinz Störrle, Snowball (2), The New Age Project, Waves (6)
Variations:	Viewing All | Günther Gebauer

Mats Björklund

Profile:	Guitarist, born 23 October 1949.
In Groups:	B & B (7), Basic-Team, Chime, Munich Machine, The New Age Project, The Rhythm Machine (4), The Spotnicks
Variations:	Viewing All | Mats Björklund
	B. Biörklund, B. Bjoerklund, Biorklund, Bjoerklund, Bjoerklung, Bjoerklyn, Bjorgland, Björklund, Björklund Mats, Björklung, Boerklund, M Bjoerklund, M Bjorklund, M. B., M. B. Joerklund, M. Bjbrklund, M.

CREDITS FOR "PROJECT CAPTAIN FUTURE" - PRODUCTION PROJECT

Bass - Matteo Cortinovis

Drums - Michael Ofori

Guitars - Steve Greenwood

Keyboards - 1062242, Syune Tatevosyan (Durch Den Kosmos)

Producer, Composed By, Recorded By, Mixed By - 1062242