RENDERING ALTERNATIVE RECORDED HISTORIES OF MUSIC

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ABSTRACT

Over 150 years or so, a rich and massive recorded history of music has been created. At many points, the musical audio created in studios and live recordings was highly contingent on particular sociocultural circumstances, and could very well have turned out differently. Recent AI technologies such as voice substitution and text-to-audio engines can help facilitate exploring alternative histories of recorded sound. We outline various approaches from reconstruction of early demoes to overt substitution of vocalists, render and discuss case study examples to accompany the paper from The Beatles, Radiohead, Depeche Mode and New Order, and situate the whole study with respect to ethical, legal and security concerns. The paper is undertaken as a musicological study utilising 'analysis by synthesis' to create sound examples that illustrate the issues, utilising a current generation of open source software.

1. INTRODUCTION

Historians study the counterfactual [1] as a 'what if' hypothesis which interrogates a key decision point in history, examining the consequences had a course of action proceeded differently to the real timeline. This is a convention well established in alternative history novels in science fiction such as Philip K. Dick's *The Man in the High Castle* (1962) detailing an America split between Japan and Germany after losing WW2; historians tend to be more careful in their reflections than novelists, not wanting to stray too far for the sake of the story. Few musicologists have discussed counterfactuals [2], and alternative history has not been a frame for music processing in previous literature, except in the acknowledgement of forgery in popular music [3]. We investigate the counterfactual in the context of recorded music history by explicitly rendering alternative versions at some key historic moments in earlier decades, providing a justification for the audio manipulation in terms of historical contingency. Deepfake audio has a dangerous potential to deceive listeners as to the veracity of recordings [4, 5]; we are explicit here as to the signal generation operations carried out, not seeking any commercial release for counterfactual renders but only creating them under the fair use/fair dealing exemption for research.

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We further discuss the ethical issues arising in greater detail in the discussion section of the paper.

Despite automatic content analysis and takedown requests, Internet media sites such as YouTube, SoundCloud or TikTok have been awash with audio deepfakes for some years, with a particular fad for deepfake cover versions peaking around 2023 [6]. Particular artists have been especially popular for voice models, such as Kurt Cobain, motivated no doubt by the tragedy of his earlier death and a perception that he had more music to create; nonetheless, the usage of a particular voice model is uninhibited in future application by the original stylistic margins or likely musical preferences of a given source artist. Although there are cases of artists being more benevolent to AI voice models (such as Grimes' 50/50 revenue sharing model [7]), the majority of creations have a similar ontological status to most mash-ups; unlicensed fan creations at most tolerated or ignored as long as they don't start to make money.

This paper proceeds by reviewing in section 2 the technology available for the creation of counter-factual recordings (with a particular emphasis on songs and the voice rather than instrumental works), detailing case studies of historical counterfactuals in section 3, before discussing the ethical implications and future possibilities for such work in section 4. As humanities research, the technology is a way to create illustrative examples, but is not itself the subject of engineering advancement in this paper; rather, we are concerned with the musicological implications and counterfactual possibilities of recent music software.

2. TECHNOLOGY FOR RENDERING

Deep learning has opened up three key technologies that assist the rendering of counterfactual audio: source separation (stem splitters), voice conversion, and text-to-audio engines. Free open source implementations are available as well as commercial options, and we survey the available technology here, with an emphasis on the programs we ourselves deployed to create the sound examples accompanying this paper. The technology is not itself the subject of comparative evaluation in what follows with respect to rigorous engineering methodology, but a means to end products. It is entirely possible that by publication time, with the rapid advancements in this area, there will be even more realistic sounding historical deepfakes achievable; nonetheless, we were able to make sound examples at a high enough quality to demonstrate a plausible counterfactual audio possibility.

2.1 Stem separation

Source separation technology [8,9] can be used to separate existing fully combined mixes, most commonly into stems for the voice, bass, percussion and 'other' though recent models have extended this further with guitar and piano part extraction. Deep learning has empowered the creation of quite effective and convincing separation; many small glitches in the individual parts following stem splitting can be overcome when parts are recombining after processing. For example, in what follows an extracted voice part will be resynthesized via voice conversion, and placed back into a mix with a little reverb. Open source solutions include Open-Unmix [1] and Spleeter [2]; commercial options include a stem splitter built into the Logic Pro Digital Audio Workstation.

2.2 Voice conversion

Voice conversion software [10] such as sovits-svc [3] and RVC [4] allows a voice model trained on acappellas for a given singer to be used to resynthesise any input voice with the timbre of that model. Pitch tracking and resynthesis with sovits-svc can be less reliable to the contour of the input vocal track [11], so RVC was preferred for this project, via the Applio project (Figure 1).

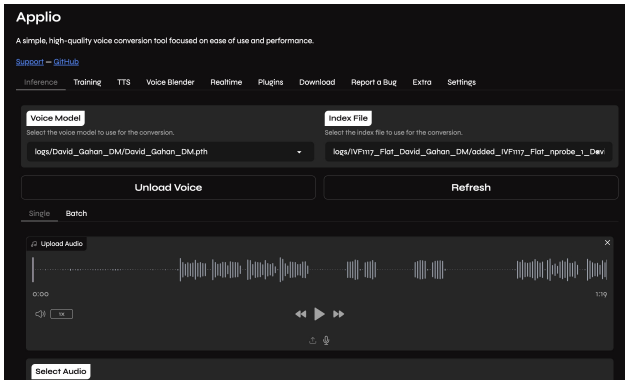


Figure 1. The Applio Retrieval Voice Conversion (RVC) software running with a web browser interface, with a Dave Gahan vocal model selected for application to a guide vocal track

2.3 Text to Music Engines

Generative AI systems which create audio from text prompts after training on a larger dataset of audio recordings with meta-data have blossomed in sound quality and availability [12, 13]; companies such as Suno are consolidating business agreements with record labels after recent legal threats, [5] and open source models such as Stable Audio [14] are trained on corpora of recordings where musicians have given full permission for use. Text To Music (TTM) systems can be used to generate new accompaniments to existing vocals (the vocals obtained via stem separation), potentially cued by descriptions of historical style. Nonetheless, the historical accuracy of text to music generative AI is doubtful, because new audio is created within a large interpolation space with respect to some derived latent representation, and can tend to blur the decades (training data is also biased towards more recent decades of Western pop). Although text embeddings may be tagged with dates, these are not consistently applied for training data, and there is no cost for historical inaccuracy in model training. We experimented both with new backings created through the Suno text to music engine, and with handmade alternative accompaniment created directly by the authors in a digital audio workstation. We report on the software choices for individual case studies below.

3. CASE STUDIES OF ALTERNATIVE HISTORY

This project studies musicological scenarios which might plausibly have happened had reality turned out just a little differently. We are not interested in far-fetched anachronisms and impossible circumstances (such as Kurt Cobain singing 1950s doo-wop or Patsy Cline, who died in 1963, tackling recent pop), but historically contingent possibilities. We now outline a set of case studies of alternative musical history that explore the rendering of counterfactuals. Starting with pop music's most dominant historic band, The Beatles, we move on consider late 1970s to 1980s post punk and synth pop, and the later 1990s-2000s band Radiohead. Although some renders with Björk were explored, the case studies are predominantly in the white male rock tradition, and future studies would seek to diversify the singers considered, for example, from the perspective of Alison Moyet rather than Dave Gahan in substitution, and to a wider net of styles and artists. The evaluation criteria were not engineering metrics, but a musicological 'analysis by synthesis'; proofs of concept that certain historically contingent manipulations were possible to create. The reader can judge the results themselves [6] and a larger scale evaluation with the general public has not been pursued at this stage.

3.1 The BAItles

As one of the most influential bands on recorded music history, The Beatles have been the subject of many previous mash-ups and manipulations, such as Danger Mouse's *The Grey Album* (2004) creatively clashing The Beatles' *The White Album* (1968) and rap acappellas from Jay Z's *The Black Album* (2003). The recordings have been examined in detail in previous work [15].

3.1.1 'Good Night' as a Lennon-led lullaby (the lost demo as a counterfactual anchor)

'Good Night' (1968) was written by John Lennon as a lullaby for his son Julian, yet the released White Album track is fronted by Ringo Starr over a George Martin–arranged

[1] https://github.com/sigsep/open-unmix-pytorch
[2] https://github.com/deezer/spleeter
[3] https://github.com/voicepaw/so-vits-svc-fork
[4] https://github.com/IAHispano/Applio
[5] https://www.theguardian.com/business/2025/nov/26/warner-music-signs-deal-with-ai-song-generator-suno-after-settling-lawsuit

[6] Supplementary audio examples https://drive.google.com/drive/folders/1DqaxGA8LKq2J6D3BuEj6v8cT3WLbXOix

"old Hollywood" orchestral frame. Lennon later recalled requesting that lush treatment ('Yeah, corny') and characterised the outcome as 'possibly over-lush,' suggesting some distance from the finished aesthetic. [7] . In our counterfactual render, we substitute a Lennon vocal onto the released arrangement to test whether the song's meaning is stable under vocalist change. The result foregrounds a tension between the track's "show-tune" orchestration and Lennon's established late-1960s vocal persona, supporting the broader claim that lead vocals are not freely interchangeable once a genre frame is set, at least with John Lennon.

3.1.2 'Yellow Submarine' as a Lennon-led ballad (work tape counterfactual)

'Yellow Submarine' is widely understood as a purpose-built Starr feature on *Revolver* (1966), sources describing it as written for his album vocal slot. [8] Later archival material from the *Revolver* Special Edition release (2022) includes a Lennon-sung "work tape" that documents a more downcast draft state before the track was reshaped into the familiar communal singalong [16]. Our counterfactual keeps the released arrangement intact but substitutes Lennon for Starr on the lead vocal line. The experiment isolates how vocal persona–more than melody or lyric alone–stabilises reception: Lennon's timbre and delivery pull the track toward irony or distance, which conflicts with the record's communal nursery-rhyme framing.

3.2 Deep-eche Mode

Vince Clarke left Depeche Mode despite their early success, subsequently forming the successful synth pop/blues duo Yazoo with Alison Moyet. Moyet had been at school with members of Depeche Mode, and the famous Yazoo song 'Only You' was actually offered back to Depeche Mode by Clarke before he settled on working with Moyet [17]. What if Depeche Mode had actually accepted the song, and Dave Gahan was the vocalist on 'Only You' instead of Moyet? We rendered 'Only You' with Gahan on vocal; both at Moyet's pitch level and down an octave, this was one of the more convincing vocal substitutions we explored in this project. Nonetheless, for the listener familiar with the original recording, there is an uncanny valley of plausibility, and the lyrics are occasionally garbled ('yesterday' becomes 'yet today', 'only you' at the end of the chorus sounds more like 'only who').

As a further example of application in reconstruction we treat an early Depeche Mode demo. The Vince Clarke-composed track 'Addiction' (1980) [18] is only available as a live bootleg and was unrecorded by the band. There are enthusiasts who have reconstructed a backing and made these available online without vocals. [9] We extracted the vocal of the bootleg demo, and attempted to increase its quality by passing it through a David Gahan vocal model, before re-aligning it with a backing reconstruction from Ferdinando Maggio. This gives a high quality reworking of the piece as if it was a studio work on their first album *Speak & Spell* (1981). We compare this to passing the bootleg audio backing (separated from the vocal) through suno; the suno reconstructed backing is far less historically appropriate than the human-crafted work, even when set to follow the guide track at 100%. The suno renders didn't match the sound of 1980/81 studio tech, and hallucinate novel unwanted material. The human render with original vocal has flaws too; the bootleg audio is muddy enough to make separation of the vocal part imperfect, leading to backing noise in the the vocal conversion (bleed from the track instrumental parts). The best way to get around this was to sing the vocal melody ourselves in Gahan's baritone register, creating a clean vocal, which is then substituted with a Dave Gahan voice conversion model, and combined with Ferdinando Maggio's instrumental reconstruction to make a version of 'Addiction' that might be a plausible track rediscovered from some hitherto unknown early Depeche Mode archive.

There are other early tracks that might benefit from reconstruction including 'Reason Man', 'Radio News' and 'Tomorrow's Dance'. There are also later demoes, such as Alan Wilder's *Some Great Reward* (1984) era demo reel, that include songs that weren't used for that album, but which can be given a Dave Gahan vocal rather than Alan's demo singing to better understand what might have been.

3.3 Newly Ordered/joy dAvIsion

The loss of Ian Curtis was a severe blow to the surviving members of Joy Division, who nonetheless agreed to continue as a band, with a change of name to New Order [19]. Their music diverged quickly from post punk guitar, embracing the synthesizer (a move which had already been anticipated on such Joy Division tracks as 'Isolation' and 'Atmosphere') and the New York club scene, and ending up by 1983 with the celebrated dance track 'Blue Monday'. But what if Ian Curtis had been around to join in this journey? The lyrics would no doubt have been different, and the vocal range and tone of Bernard Sumner is higher and lighter than Ian Curtis, but voice substitution still gives us the opportunity to try 'Blue Monday' with Curtis on vocals; the final result is a strange haunting document, difficult to "unhear". It should be noted in passing that there are multiple early versions of the New Order song 'Ceremony' with Ian Curtis on vocals, [10] so a comparison of Bernard Sumner's and Ian Curtis's approaches can be carried out in this limited case; Curtis is much less accurate with the pitch (with different melody notes sometimes selected), and so would likely have approached 'Blue Monday' in a looser manner than the render here with Bernard Sumner guide vocal sets out.

[7] See `https://en.wikipedia.org/wiki/Good_Night_(Beatles_song)` and `https://www.beatlesbible.com/songs/good-night/`

[8] See `https://en.wikipedia.org/wiki/Yellow_Submarine_(song)` and `https://www.beatlesinterviews.org/dba10sub.html`

[9] See Ferdinando Maggio's attempt at `https://www.youtube.com/watch?v=aqSlvywbHeY` and Adriano Briles at `https://www.youtube.com/watch?v=dd1qCttYGvg`

[10] For example, this rehearsal recording in Manchester from 1980: `https://www.youtube.com/watch?v=MMQ1NrkPoKw`. Radiohead have also covered Ceremony: `https://www.youtube.com/watch?v=cedNya7e8Uc`

3.4 rAdIohead

Radiohead's *Kid A* (2000) and *Amnesiac* (2001) albums saw a shift from alternative guitar towards electronica, moving far from the weight of the successful *OK Computer* (1997) album [20]. Nonetheless, much of the guitar sound of the band does survive the experiment on particular tracks ('Optimistic', or 'Knives Out', for example). We asked whether a track like 'Knives Out' could have had alternative versions that went further into electronica, but were ultimately rejected by the band. Recordings are contingent on production decisions, and we can audition plausible branches that were never released. We compared rendering with Suno generated backings, using prompts evoking electronica tropes circa 2000. We also created a backing from scratch in Logic. Since Suno lost the original form if allowed to generate in uninhibited fashion structurally, improved coherence was achieved by passing in the original accompaniment as guide audio. However, Suno often created stylistically awkward and achronological output; our manually created alternative backing was more stylistically coherent. Motivated also by collaborations by Thom Yorke during the *Kid Amnesiac* period, we also rendered versions of 'Knives Out' and of 'Idioteque' with Björk on lead vocals. These turned out to be some of the least convincing renders we created in the project; the vocal model quality was not sufficient with such a unique vocalist as Björk. Rather than Thom Yorke's source vocal, a better render would require a guide vocal closer to her signature free timing and virtuosic enthusiasm.

4. DISCUSSION

Ethical considerations of AI music technology have been raised in multiple recent publications [21–23]. This current study raises potential significant issues of its own, from copyright permissions (including those held by the estates of deceased musicians) through to seemingly advocating the corruption of recorded music history. Recent consolidation deals between the established music industry and new AI music companies, such as that between WMG and Suno, point to a new licensed era of non-piratical text-to-audio models (even if Stable Audio had already pioneered a more ethical route). Fair use defence of mash-ups and extended sampling procedures have been previously advocated [24, 25], and may be sufficient in the case of musicological research or non-commercial home use. Notwithstanding more ethically sourced training data for AI models, or private usage rather than mass distribution of outputs, generative AI has an environmental impact. It has been shown that digital music in general, even preceding resource hungry generative AI, is not somehow free of real world resource concerns [26].

The corrupting influence of alternative renders is now considered. By fabricating "new" historical documents (see Figure 2 for a more general example), trust in existing recorded music can be eroded. The deluge of AI slop is already undermining the main human basis of recorded history – in one recent statistic, the streaming service deezer admitted that 44% of uploads were now AI generated [27] [11] – and mass generation of historically inaccurate and mis-attributed music is a potential concern. One recent study went so far as to consider whether Taylor Swift (or a bad actor on her supposed behalf) might try to create Taylor's Versions of all recorded music history as the ultimate egotistical cultural imposition [28]. We view fabrication of new alternative recordings as an investigative procedure, giving a new angle on analysis by synthesis to the musicologist within isolated case studies. We do not support generating a mass of AI slop alternative versions for general release online, or misattribution of particular recordings as if they are part of the original historical record.

A big danger is that convenience trumps historical accuracy, and that the more time passes since a given era of recorded music history, the less people are alive with any direct experience of that time, and the less incentive is there to respect that past. From the perspective of 1000 years from now, Elvis and the Pet Shop Boys may be viewed as contemporaries (despite never releasing music at the same time), and the definitive version of 'Always on my Mind' may be contested; our ancestors may even have moved past the point of worrying about absolute historical accuracy, and all media become pliable and untrustworthy. Certain artists cancelled due to their gross misdeeds (such as Gary Glitter) still retain a historic influence within recording history, and who is to say how future artists might rediscover and re-assimilate such figures in new ways, whatever our current qualms. It is possible that future generations will consider the creation of personalised versions of the historical record entirely ethically acceptable. Hopefully they will keep accurate reference copies of the true history for reversion from their divergent individual revisions, though layers of AI mediation may corrupt their listening preferences. Recordings from 100 years ago enter the public domain without restriction each year in the US, so there are already many decades of recorded music history (from 1925 back into the later 19th century) available for unrestricted manipulation; it will only be 25 years until the modern popular music era from 1950 starts to lose all mechanical copyright; the Walter Ruttmann piece *Weekend* (1930), an early composition exploiting sound on film, will fall within five years at the time of writing. Counterfactual generation, closer to the real timeline rather than anything-goes anachronistic free fantasy, may only be one creative option, perhaps most favoured by a few conservative history-preserving specialist musicologists.

Restricting consideration now to musicological extensions, a further direction would be to work more directly with historically anchored "decision-point" materials by enhancing the intelligibility of existing work tapes rather than generating new performances. In the case of 'Yellow Submarine (Songwriting Work Tape / Parts 1–2)', vocal-focused separation could be used to extract Lennon's guide vocal more cleanly, followed by careful audio restoration processes to produce a clearer listening document of the drafting-stage affect. This would enable an alternative counterfactual angle: not voice substitution,

[11] https://newsroom-deezer.com/2025/11/deezer-ipsos-survey-ai-music/



Figure 2. Analogous to Soviet-era photo retouching, such as the redaction of Nikolai Yezhov from a photograph with Stalin [29], these images show The Fab Three, John, Paul and Ringo, of the Threetles, to illustrate a scenario where George Harrison is excluded from the Beatles in the historical record, his songs such as 'Here Comes the Sun' no doubt being misattributed to Lennon and McCartney.

but a reconstructed presentation of the song at an earlier emotional register—closer to the work-tape melancholy - against minimal accompaniment. Importantly, such a render would need to be labelled explicitly as edited/restored from existing tape material, not as a newly discovered studio recording, and would be evaluated primarily as a method for exposing compositional and affective features that were not pursued by the band.

5. CONCLUSIONS

> 'They took the credit for your second symphony, rewritten by machine on new technology, and now I understand the problems you can see' The Buggles 'Video Killed the Radio Star' (1979)

This paper has examined the opportunity afforded by new stem splitting, voice conversion and text to music technology to explore music recording counter-factuals, from alternative singers to partially fabricated reconstructions of early demoes and unreleased works. Our primary interest is as musicologists of recorded music history within the scope of fair dealing. No commercial intent underlies this project, and the audio examples created are open curiosities. For particular case studies different software can be utilised based on need; historical reconstruction using the Suno TTM engine was however most often unsatisfactory and anachronistic. Future work may run more systematic evaluation of alternative history audio recordings, with respect to engineering quality criteria, and to the qualitative responses of people to the existence of such reworkings within an 'uncanny valley' of audio possibility.

From a musicological angle, AI rendering can make counterfactual questions audible, not to replace history, but to interrogate it. When used with restraint, clear labelling, and historically anchored constraints, synthetic "what-ifs" can function as a new kind of analytical instrument, a way to test how recordings might have been otherwise, and in doing so, sharpen what we think we know about why the recordings we have ended up sounding the way they do. This process assists historical insight even when there are vocal model errors, though is most convincing exactly when it most threatens historical integrity, in creating seamless alternative possibilities in the space of musical signals. Our audio examples are available online as provocations to the reader, for them to make up their own mind on the necessity and sound quality of such creations.

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