

# **Chiptune: The Ludomusical Shaping of Identity**

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## **Abstract**

Chiptune is an early form of digital electronic music, which began its life in late 20<sup>th</sup> century video games and home computer software. Since, it has undergone a rapid evolution from an obsolete industry tool to a thriving global fan culture. In the present-day, chiptune spans a multitudinous array of musical practices; its signature ‘bleeps’ and ‘bloops’ branch into many other stylistic conventions and playful fannish crossovers. Wherever chiptune fans go, and whenever they musically play, the technological and timbral constraints that define chiptune’s sound remain a staple throughout their musical and fannish activities. Where previous research on chiptune predominantly documents chiptune’s rich techno-cultural history – often speculating as to its future – and the discourses of its participants, this study takes a wholly new approach and explores the ways in which chiptune’s signature technologies and timbres shape fan identities in their musical performance. Through its focus and interdisciplinary framework, this study not only develops new insights into chiptune fan culture, but also sheds light on the broader questions surrounding the playful relationship between technology, timbre, musical performativity, and fan identity.

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# Table of Contents

	<b>Page</b>
<b>Abstract</b> .....	iii
<b>Acknowledgements</b> .....	iv
<b>List of figures</b> .....	vii
<b>Introduction</b> .....	1
I.1 Chiptune: a ‘Byte Size’ History .....	2
I.1.1 <i>From binary and bytes to beeps and beats</i> .....	4
I.2 Chiptune as Participatory Culture .....	11
I.3 Chiptune: Research questions .....	19
I.4 Research into Chiptune and Music Fandom .....	23
I.5 Methodology, Analytical Framework, and Chapter Overview .....	29
I.5.1 <i>Methodology</i> .....	29
I.5.2 <i>Analytical framework and chapter overview</i> .....	40
<b>Chapter I – Chiptune Fan Identity: At ‘Home’ in the Music</b> .....	47
1.1 Chiptune: The Bleeps and Blips of ‘Home’ .....	48
1.1.1 <i>Musicking and home</i> .....	49
1.1.2 <i>The ‘homecoming’ of chiptune fandom</i> .....	54
1.2 Chiptune Actor-Networks .....	65
1.2.1 <i>Musical actor-networks</i> .....	65
1.2.2 <i>Chiptune’s Primary Mediators</i> .....	69
<b>Chapter II – Chip-musical technologies: The Remediation is ‘the Message’</b> .....	71
2.1 Chiptune’s Consistent Distinctiveness .....	72
2.2 PSG Remediation .....	77
<b>Chapter III – Chiptune Capital and Chiptune Literacy</b> .....	89
3.1 Chiptune Fans as Mediators .....	89
3.1.1 <i>Bourdieu and fandom</i> .....	90
3.1.2 <i>Chiptune capital</i> .....	99
3.2 Media Literacy .....	104
3.2.1 <i>The building blocks of media literacy</i> .....	105
3.3 Chiptune Literacy: Three Building Blocks .....	106
3.3.1 <i>The knowledge structures of chiptune capital</i> .....	106
3.3.2 <i>The personal locus: chiptune matters</i> .....	116

3.3.3 <i>Chiptune literacy: competencies</i> .....	122
<b>Chapter IV – Chipsound Timbre: ‘Home’ is Where the Haunt is</b> .....	129
4.1 The Agency of Chipsound Timbre: Haunting Waves .....	129
4.1.1 <i>Hauntology and nostalgia: mediated memory</i> <i>and disjointed temporality</i> .....	137
4.2 Chipsound and Nostalgia: Mediated Memory and Temporal Tension .....	144
4.2.1 <i>Chipsound nostalgia and ‘authenticity’</i> .....	148
4.2.2 <i>Chiptune: ‘home’ is there the haunt is</i> .....	150
<b>Chapter V – Chiptune Ludomusicality</b> .....	152
5.1 Be Still My Bleeping Heart: Chiptune, Fandom, and Affect .....	153
5.1.1 <i>Chiptune and affect</i> .....	153
5.1.2 <i>Affective potential, affective encounters and events, affective traces,</i> <i>and affective bodies</i> .....	156
5.2 Chiptune Ludomusicality.....	162
5.2.1 <i>Chiptune and ludomusical potential</i> .....	163
5.2.2 <i>Chiptune in play: ludomusical encounters, vitality,</i> <i>and identification</i> .....	168
5.3 Ludomusicality and the ‘Homecoming’ of Chiptune Fandom.....	176
<b>Chapter VI – Chiptune Fan Identity, Ludomusicality, and Nomadic Subjects</b> .....	180
6.1 Braidotti’s Theory of Identity and Affect .....	180
6.1.1 <i>The nomadic subject</i> .....	184
6.2 Chiptune Fan Identity, Ludomusicality, and Nomadic subjects .....	189
6.2.1 <i>The ludomusical shaping of chiptune fan identity: nomadic</i> <i>trans/formation</i> .....	190
6.2.2 <i>The ludomusical longevity of chiptune fan identity: conatus, chiptune</i> <i>capital, and nomadic desire formation</i> .....	199
<b>Conclusion – Chiptune: The Ludomusical Shaping of Identity</b> .....	211
<b>Appendix</b> .....	227
<b>Bibliography</b> .....	425

# List of figures

<b>Figure</b>	<b>Page</b>
1. Subtractive synthesis waveforms .....	6
2. Mock-up of a tracker sequencer .....	13

# Introduction

To introduce you to this study, I would like to invite you to listen to a musical example: ‘Flame Repellent’ by musician Fearofdark (2010).<sup>1</sup> I would like you to focus specifically the sonic character – or the timbre – of the instruments and the musical textures they create. The timbre of the bass sound is distinctly synthesized but not complex; it is a basic electronic waveform: a pulse wave, defined by its hollow and somewhat nasal qualities. The chords we hear are sounded through pulse waves: three separate ones sounding in unison for every note. The melody line, another pulse wave, is nimble and athletic in its articulation and expression. Delay is applied to the lone pulse wave melody, softening the brashness of the waveform’s ADSR envelope, and fleshing out the texture of the musical arrangement. At 1:28-1:38 in ‘Flame Repellent,’ the middle 8 of the song prior to the breakdown, we hear new sounds that are unique to the kind of music Fearofdark composes. Intermittently bubbling up through the mix, we hear chirps of harmonic colour that are timbrally reminiscent of the trills an old electronic telephone makes when it rings.

The percussion is, likewise, synthesized and noticeably ‘limited,’ simple and low quality – or ‘lo-fi.’ We hear a deep thud – an electronic kick drum – which consists of rumbling bass frequencies as well as a distinct hissing and distortion. The snare drum is represented by a short snap of filtered white noise, and even shorter snippets of white noise pepper the kick and snare beats in every bar as the song builds – acting in the role of a hi-hat playing semi-quaver rhythms. Transitions between phrases are signalled by tom-tom drum fills – similar to the electronic tom-tom drums heard in 1970s and 1980s disco tracks – and sweeping crescendos of white noise, not unlike a tidal wash of television static.

Arranged through simple sounds and yet musically driving, fluid, and energetic in its performance, ‘Flame Repellent’ is exemplary of a musical practice and style called ‘chiptune.’ ‘Chiptune’ – sometimes referred to as ‘chipmusic’ or ‘micro-music’ – is a form of electronic music that emerged through the development of microchip audio hardware in the latter part of the 20<sup>th</sup> century.<sup>2</sup> It is because of the limitations of these now obsolete microchip audio technologies that chiptune becomes distinct. Its timbral quality is sometimes captured verbally by listeners as ‘bleeps,’ ‘bloops,’ ‘blips,’ and all manner of affectionate adjectives: ‘imperfect,’ ‘raw, noisy, forbidding, industrial, illegal, outdated, subversive, [and] underground’ sounds

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<sup>1</sup> <https://www.youtube.com/watch?v=VUTUuAoBFPk>

<sup>2</sup> ‘Chiptune’ and ‘chipmusic’ are used interchangeably throughout this thesis.



(Driscoll and Diaz 2009). For what might at first sound like a very homogenous form of electronic music, the heterogeneity of contemporary chiptune culture demonstrates much to the contrary.

Chiptune's simple sounds and musical technologies have fostered a thriving community of devotees that span the globe. As meek, sonically basic, technologically limited, and perhaps novel as chiptune is, there is a special *something* about the musical use of these technologies and timbral qualities that, for fans the world over of all ages and all walks of life, harnesses a strong emotional power and evokes a profound sense of individual and communal identity. It is this special *something* that this study aims to grasp. To ground the research focus of this study, it is best to start from the beginning with an introductory guide to chiptune and its dual origin, both technological and sociological, and to define the technical terms used throughout this thesis

## **I.1 Chiptune: a 'Byte Size' History**

Bleep, bloop, blip, ksssssh... Game Over!

Computer-generated music and sound can be traced back to the 1950s, but the genealogy of the musical and (sub)cultural phenomenon that came to be chiptune is rooted in the development of microchip audio hardware for home computers and video game platforms from the early 1970s to the mid-1990s (Carlsson 2008, p. 156).<sup>3</sup> Contrasting sharply with the affordances of contemporary video game platforms, home computers, and all manner of portable smartphones and tablet devices, in the 1970s, 1980s, and up to the mid-1990s, video game audio had to be generated in real-time due to computer processing (CPU) limitations (see Collins 2008a, Chapter 2; McAlpine 2018, p. 126).

For generations of gamers, the real-time generation of microchip audio was once the sound of video game make-believe. The earliest use of microchip audio – and one of the earliest instances of diegetic sound in a video game – can be traced back to the electronic 'space combat' noises of Nutting Associates' *Computer Space*, and to the briefest of electronic blips that represented the 'ball' hitting the 'paddle' in Atari's *Pong* (Nutting Associates 1971; Atari 1972; Collins 2008a, p. 8). Such microchip sound effects became synonymous with the

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<sup>3</sup> An extensive timeline of pre-video game chiptune like sounds in musical composition is available here: <https://chipflip.wordpress.com/timeline/>

atmosphere of old video game arcades, where florescent lighting, huddled masses of teenagers, and lurid carpets were animated by the white noise explosions of *Defender*, the synthesized zoops and zaps of laser cannons and UFOs of *Space Invaders*, and the pathetic, withering noise of *Pac-Man* dying (Williams Electronics 1981; Nishikado 1978; Namco 1980).<sup>4</sup> Later on, such micro-sounds would enter into the domestic environment (see Collins 2008a, Chapter 2).<sup>5</sup>

Progressing from basic in-game sound effects, the earliest examples of what we might consider video game *music* (VGM) can be traced to the looping refrains of Midway's *Space Invaders* – a repeated descent following the notes of B, A, G, and F# – and Atari's *Asteroids* – a repeated back and forth between F and F# (Midway 1978; Atari 1979; cf. Collins 2008a, p. 12). This music, too, was generated in real-time during gameplay, and is arguably the first instance of what we can call chiptune or, quite literally, chip-music (Carlsson 2008, p. 157). As the hallmark and industry standard of VGM for the twenty years that ensued, chiptune prominently stuck in the hearts and minds of gamers.

Chiptune gave life and depth to the primitive and pixelated graphics that represented in-game environments. From the brief loops of *Space Invaders* and *Asteroids*, more complex chiptune compositions went on to electrify the bizarre and often frustrating geometries of such 2D platforming video games as *Mega Man* on the Nintendo Entertainment System (NES) (Capcom 1987).<sup>6</sup> Chiptune amplified a sense of adventure and heroism as gamers began their quests in such role-playing video games (RPGs) as *Dragon Warrior III* (Enix 1988).<sup>7</sup> Chiptune heightened the tension in games that required strategy, such as the use of musical accelerando in the soundtrack to the arcade game *Rainbow Islands: The Story of Bubble Bobble 2*,<sup>8</sup> and also encouraged button-mashing dexterity during the final boss battle in Super Nintendo (SNES) video game *Contra 3: The Alien Wars* (Taito 1987; Konami 1992).<sup>9</sup> For some, chiptune might evoke the anxiety of the 'pink water' in *Sonic the Hedgehog 2*'s now notorious in-game level 'The Chemical Plant Zone,' as the soundtrack evokes frustration and sheer panic as it ascends to the gurgling death knell for the iconic blue hedgehog (SEGA 1992).<sup>10</sup>

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<sup>4</sup> I would like to thank Alayne Peterson for sharing these fond memories with me.

<sup>5</sup> One such familiar example would be the synthesized perfect 5<sup>th</sup> – an interval between two musical notes consisting of 7 semitones – that sounds when currency is collected in the video game *Super Mario*, and the gentle electronic portamento that sounds when Mario takes a gravity-defying leap into the air (Nintendo 1985).

<sup>6</sup> An example of the soundtrack can be heard here:

<https://www.youtube.com/watch?v=CJdFxtOysjo&list=PL2F9FC2ABF7FDAF43&index=4>

<sup>7</sup> An example of the soundtrack can be heard here:

<https://www.youtube.com/watch?v=uo6EnAstG3s&list=PL96D9679006090549&index=26>

<sup>8</sup> The main theme at regular speed can be heard here: <https://www.youtube.com/watch?v=aNeXw1fB5o8>

<sup>9</sup> An example of the soundtrack can be heard here: <https://www.youtube.com/watch?v=zXvvV1pbNWM>

<sup>10</sup> An example of the soundtrack can be heard here: <https://www.youtube.com/watch?v=cTicU8jklyI>

Spine-tingling chiptune fugues haunted the blocky gameplay environments of gothic citadels, graveyards, and underground chasms in the early instalments of the *Castlevania* video game series (Konami 1986).<sup>11</sup> Chiptune vitalised the dithered<sup>12</sup> amethyst and apricot skies of the alien worlds in the SEGA Mega Drive video game *Toejam and Earl: Panic on Funkatron*,<sup>13</sup> it animated the crystalline vistas of the ice cave levels in the SEGA Master System video game *Fire and Ice*,<sup>14</sup> and illuminated the perilous lava fields in the Commodore Amiga video game *Lionheart* (SEGA 1992; Virgin 1992; Thalion Software 1992).<sup>15</sup> Chiptune was once, as aptly described by Alex Yabsley, ‘the sound of playing:’ the genesis of what we now call VGM (2007, p. 1).

### ***1.1.1 From binary and bytes to beeps and beats***

‘Of course, back in those days that was all we could do within the limited capacity.’

(Nintendo composer Koji Kondo in Nova 2014, p. 55)

The development of the ‘Programmable Sound Generator’ (PSG) in 1977 is considered the definitive origin of VGM (Collins 2008a, p. 10). PSGs are microchips that generate sound and music based on the player’s input; the *kinds* of sound and music they generate must be pre-scripted as a series of assembly or hexadecimal codes, detailing information we might traditionally record on manuscript paper – such as pitch, duration, articulation, modulation, and expression (Collins 2008a, p. 10). The PSG thus afforded the would-be video game composer the ability to orchestrate separate pieces of music to respond to the actions of the player, such as title screen music, in-game music, hi-score music, and game over music.

When triggered during gameplay, these codes would feed into the PSG and trigger its oscillators. An oscillator, in very basic terms, is an electronic tone generator which emits a signal (a waveform) at a given frequency (pitch). The earliest PSGs only had two oscillators, such as the TIA chip of the 1982 Atari 2600, and each audio channel was monophonic (*Ibid.*). As a result, VGM of the time was extremely basic in both its synthesized sound and its arrangement. The method of code-to-audio transmission, and the ways in which a seemingly

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<sup>11</sup> An example of the soundtrack can be heard here:

<https://www.youtube.com/watch?v=btgi3TPL3AE&list=PL8475D168894529C1&index=10>

<sup>12</sup> ‘Dithering’ is a shading technique commonly employed in pixel art practices to achieve a colour gradient effect. See examples here: <https://opengameart.org/content/chapter-7-textures-and-dithering>

<sup>13</sup> An example of the soundtrack can be heard here: <https://www.youtube.com/watch?v=JmEeaXw0iyg>

<sup>14</sup> An example of the soundtrack can be heard here: [https://www.youtube.com/watch?v=ZXPITDZ\\_C2Y](https://www.youtube.com/watch?v=ZXPITDZ_C2Y)

<sup>15</sup> An example of the soundtrack can be heard here: <https://www.youtube.com/watch?v=hVGNqtqEQ4Y>

dull series of codes can transform into a rich and dynamic composition is, broadly speaking, the very blueprint of chiptune as a distinct form of music in both technology and sound quality (cf. Dittbrenner 2007, p. 87).

While I use the term ‘chiptune’ to capture 1980s and 1990s VGM, chiptune is by no means homogeneous. Even in the context of video games, ‘chiptune’ is an expansive umbrella term for an entire rubric of different technologies and timbral qualities. PSGs may be considered the technological blueprint of chiptune, but the 1980s saw a rapid development in other forms of microchip audio for video game consoles and home computers: each working on the basis of code-to-sound, but the ways in which these chips did so varied greatly. Early PSGs even varied between video game and home computer manufacturers, each varying the design to incorporate improvements (Collins 2008a, p. 10).

There are two generations of video game console and home computer technology, and each have their own PSG variations and timbral aesthetic for the kinds of chiptune they produce: the ‘8-bit family’ and the ‘16-bit family’ of computer processing power (cf. Nova 2014, p. 54, 63; Paul 2014, p. 508; Collins 2008a, Chapter 3).<sup>16</sup> The chiptunes produced by 8-bit machines are the pinnacle of the ‘bleepy’ character often attributed to old video game sound and music in general. The PSGs of these consoles typically used a sound synthesis method called ‘subtractive synthesis.’ Subtractive synthesis is a method of sound synthesis that involves the generation of basic waveforms – a sine wave, sawtooth wave, triangle wave, square/pulse wave, or (white)noise – after which a sound filter will shape (subtract or attenuate) particular frequencies from these waves before they are passed through an ADSR envelope and amplification (see Collins 2008a, pp. 10-8).

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<sup>16</sup> To clarify: ‘bit’ refers to ‘binary digit,’ and is the smallest possible unit of data used in computer language. In relation to computer processing power, Karen Collins puts it succinctly: ‘the number of bits indicates how much data a computer’s main processor [CPU] can manipulate simultaneously. For instance, an 8-bit computer can process 8 bits of data at the same time’ (Collins 2008a, p. 13). The 8-bit family of video game consoles, home computers and hand-held video game machines typically subsumes CPUs from the mid 1970’s to the end of the 1980’s. A few notable examples include the Atari 2600 (1977), the ZX Spectrum (1982), the Commodore 64 (1982), the Amstrad CPC (1984), the Nintendo Famicom and NES (1983; 1986), the SEGA Master System (1985), and the Nintendo Game Boy (1989).

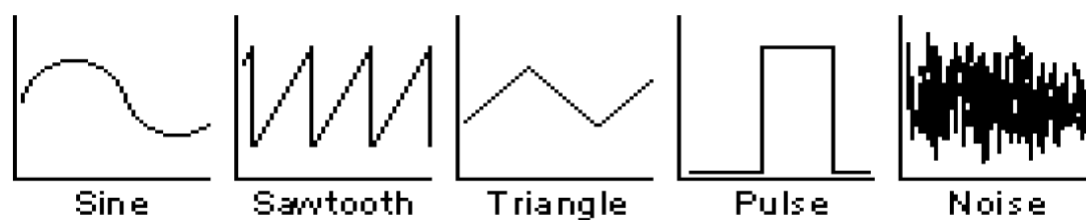


Figure 1. Subtractive synthesis waveforms.

8-bit chiptunes typically consist of a mixture of the basic waveforms illustrated above for their instrumental parts. To familiarise the reader with an example of an 8-bit chiptune, I would like to invite them to listen to Tim Follin’s title music for *LED Storm*<sup>17</sup>, a video game for the ZX Spectrum (Follin 1988; Go! 1988). Subject to variations throughout its life span, ZX Spectrum models housed a PSG capable of sounding three simultaneous voices (Collins 2008a, pp. 10-2). This model of PSG was only capable of producing pulse waves, but it also had the ability to play a pulse wave at rapid and random frequencies – generating a pseudo white noise effect ideal for the creation of percussive timbres.

Despite the ZX Spectrum’s audio constraints, Follin’s work for *LED Storm* is fast paced, dynamic and rich, and an archetypal 8-bit chiptune that shares many characteristics with Fearofdark’s ‘Flame Repellent.’ Like ‘Flame Repellent,’ the melodic and harmonic content of the title music for *LED Storm* is sounded through pulse waves. The piece opens with four bars of rippling arpeggio, with all three audio channels sounding pulse waves in succession to one another – at different volumes – to create a dynamic echo effect. Also like ‘Flame Repellent,’ the main melody line is a lone pulse wave, given its dynamism and expression through use of both vibrato and portamento.

Unlike ‘Flame Repellent,’ *LED Storm*’s title music does not contain block chords. ‘Flame Repellent’ was composed using 5 monophonic audio channels; the 3 channels of ZX Spectrum hardware render playing block chords impossible if the composer also wishes to program rhythm and melody. Follin achieves harmonic colour in his piece through another archetypal characteristic of 8-bit chiptune. If we listen between 0:23 and 0:43, we hear the very same bubbling sound as we did at 1:28-1:38 in Fearofdark’s ‘Flame Repellent.’ In this thesis, I define this sound as a ‘telephone chord.’

<sup>17</sup> Which can be heard here: <https://www.youtube.com/watch?v=aSQ4IU8snVk>

‘Telephone chords’ describe a method commonly used by chiptune VGM composers to achieve harmony within the confines of a single monophonic audio channel. The pitches of the chord would be triggered through rapid arpeggiation, creating the psychoacoustic effect of polyphony and harmony. The consequence of this method is that we do hear harmony or a chord, but the timbre of the sound is distinctly fragmented and almost trill-like. Such methods were known among video game composers as a ‘trick’ – a means to overcome PSG limitations – and for video game composers to realise their intentions, the use of such ‘tricks’ was essential (Paul 2014, pp. 520-2; see Collins 2008a, pp. 15-33).

Some PSGs of the 8-bit era – such as the NES’s Ricoh 2A03 – afforded the composer very rudimentary forms of audio sampling.<sup>18</sup> In the process of digital sampling, audio is captured and converted into digital information; the higher the ‘sample rate’ of the recording technology, the more information on the waveform the sampler is able to capture accurately. Once audio is sampled as digital information, it can be reproduced using a digital-to-analogue converter (DAC), which renders the sample audible again through a process entitled pulse code modulation (PCM) (see full demonstration in Collins 2008a, pp. 13-5). Due to the constraints of 8-bit systems, there was less space available to record and playback samples fully and clearly. Consequently, samples became noticeably distorted and accrued aliases and artifacts – errors in sampling that can introduce unusual harmonics and timbral qualities to a waveform due to its compression – which produced noticeably crunchy, and hissy audio (*Ibid.*, p. 15).

The use of the term ‘8-bit’ to describe the chiptune generated by these machines, however, is something of a misnomer (cf. Yassin 2015). 8-bit systems distributed their limited CPU to a multitude of simultaneous actions; 8-bit processing power in a video game, for instance, would be distributed between the different tasks of sound/music generation, graphic generation and manipulation, and gameplay scripts. So, referring to chiptune as ‘8-bit’ is not strictly accurate on a technical level – at least regarding their video game context. For the sake of simplicity, however, the description of certain forms of chiptune as ‘8-bit’ in this study refers to the kinds of musical, technological and timbral qualities typical of a specific generation of computer processors and PSGs which, broadly speaking, we can boil down to the following characteristics:

### **8-Bit chiptune**

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<sup>18</sup> The Ricoh 2A03 chip had five audio channels: two pulse wave channels, one triangle wave channel, a white noise channel and a sample channel (Collins 2008a, p. 25).

- Typically, the entire instrumental arrangement consists of subtractive synthesis waveforms – typically pulse, sawtooth, and triangle waves
- The prominent use of psychoacoustic tricks – such as delay, telephone chords, and waveform manipulations – to circumvent PSG limitations and flesh out musical arrangements
- The use of filtered white noise as a percussive or rhythmic device
- Some 8-bit PSG's can play very basic, brief, and low-resolution audio samples – typically percussive sounds.

The 16-bit generation of video game consoles and home computers emerged in the mid-1980s alongside the ongoing development of 8-bit systems and continued until the early 1990s.<sup>19</sup> 16-bit brought exciting new horizons for the video game industry. More processing power could be devoted to music and sound, and as a result there is a prominent divide in quality between the 8-bit and 16-bit generations of chiptunes (cf. Paul 2014, p. 508). Expanding on the constraints of early PSG chips and subtractive synthesis, advances in processing power and microchip technology in the 16-bit era PSGs allowed for a greater number of audio channels for composers to use – though still monophonic – and a more diverse timbral palette than subtractive synthesis alone (Collins 2008a, p. 38).

There are two forms of sound synthesis that distinguish chiptune from the 16-bit era: frequency modulation synthesis (FM) and pulse code modulation synthesis (PCM). In basic terms, FM synthesis involves modulating one waveform – typically a sine wave – to alter the frequency (pitch) of another, before the sound is then shaped by an ADSR envelope (see further in *Ibid*, p. 10). The resulting sounds are much more complex in their timbral makeup than anything subtractive synthesis could achieve. FM synthesis is adept at creating crystalline timbres, such as bells and chimes, wooden sounds, waspish and punchy brass sounds, and metallic or rubbery bass sounds (cf. Paul 2014, p. 527). FM synthesis came to prominence in the video game sphere with the introduction of the SEGA Mega Drive video game console in

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<sup>19</sup> Notable 16-bit systems include the Commodore Amiga line of computers (1985), the TurboGrafx-16 (or PC Engine) console (1989), the SEGA Mega Drive (or SEGA Genesis) (1988), and the Super Nintendo (SNES) (1990).

1988, which housed Yamaha's YM2612 PSG (Collins 2008a, pp. 38-45).<sup>20</sup> This PSG boasted 6 monophonic FM audio channels, and one audio channel for the use of samples through PCM.

Yuzo Koshiro's piece 'Make Me Dance' for the 1989 SEGA Mega Drive game *The Revenge of Shinobi* captures the quintessential character of 16-bit FM chiptune (Koshiro 1989; SEGA 1989).<sup>21</sup> The piece opens with two bars of a shuffle rhythm. The muffled and gritty kick, snare, and hi-hat sounds we hear are audio samples: converted into digital information, compressed and then, through PCM, converted back to an analogue signal through the SEGA Mega Drive's DAC. In bar 3 – at 0:05 in the piece – we hear an FM synth bass, which is archetypal of the kinds of bass sounds FM synthesis can produce: metallic and bouncy. In bar 5 – at 0:10 in the piece – we hear chord stabs of a piano-like FM chime. In bar 7 – 0:15 in the piece – we hear an FM brass sound and a hollower, pulse wave-like tone for the melody. Both sounds are distinctly abrasive and waspish in their character, another key characteristic of FM synthesis-based chiptune. In addition to the broader sound palette and greater array of sounds, another noticeable difference is a lack of telephone chords. There was less need for this trick as a greater number of audio channels afforded by the YM2612 allowed the composer more flexibility to flesh out their arrangements.

The second defining characteristic of 16-bit chiptunes, PCM, is synonymous with the 1985 Commodore Amiga line of computers, whose PSG – the MOS 8364 or 'Paula' – afforded the user four monophonic audio channels (Collins 2008a, p. 57). The Amiga used the MOD – or module – format for musical data, which was a file of consolidated musical information not unlike MIDI (*Ibid.*, p. 58).<sup>22</sup> During different game play events, the corresponding MOD files would be loaded by the Amiga's CPU and fed into the Paula PSG.

Andrew Barnabas's intro theme for the Amiga video game *Swiv* is a good example to familiarise the reader with the distinct sound of this form of chiptune (1991; Random Access 1991).<sup>23</sup> Every sound we hear is a PCM-distorted audio sample. The drum samples are noticeably higher quality than those heard in the SEGA Mega Drive example, but still retain

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<sup>20</sup> Many of us will be familiar with the sound of FM synthesis as the engine for the seminal 1983 digital synthesizer: the Yamaha DX7. The DX7 is hailed by many as 'the sound of the 80s,' and its signature preset sounds can be heard on a plethora of records from 1983 onwards. The bass line of Aha's *Take on Me*, for instance, uses one of the famous bass presets that came pre-programmed into the synthesizer (1984). A thorough tracing of the DX7's use in 1980s popular music is available here: [http://bobbyblues.recup.ch/yamaha\\_dx7/dx7\\_examples.html](http://bobbyblues.recup.ch/yamaha_dx7/dx7_examples.html)

<sup>21</sup> Which can be heard here: [https://www.youtube.com/watch?v=EbCtJS9AV2E&list=PL40W\\_mj8t9xqb8nGcIy9EipD5NtU8SggN&index=6](https://www.youtube.com/watch?v=EbCtJS9AV2E&list=PL40W_mj8t9xqb8nGcIy9EipD5NtU8SggN&index=6)

<sup>22</sup> Standing for 'Musical Instrumental Digital Interface,' MIDI is an industry standard computer language that emerged in 1985, which allows for computers and music technology to communicate with one another.

<sup>23</sup> Available here: <https://www.youtube.com/watch?v=sYTZuJt9S8w>



the audible aliases and hissing attributed to them through their compression. The bass sound is also a compressed audio sample with noticeable lo-fi hiss, and not a generated waveform from an oscillator as we have heard prior. The same PCM treatment also applies to the synthesized melody line. As we can hear in Barnabas's piece, the instruments are hard panned to either the left or right speaker, or headphone – this was the Amiga's way of achieving a stereo image.

As is the case with Koshiro's 'Make Me Dance,' in Barnabas's piece we can also notice there are no telephone chords. Amiga composers would often sample different chords, building a sample library of major, minor, and all manner of harmonic extensions, which could then be played as a single sample within a monophonic audio channel. Sampling chords to overcome PSG limitations became another key characteristic of 16-bit PCM chiptunes. Even with this affordance, however, in addition to their low bit-rate quality Amiga samples were often crudely spliced and edited. As a result, the loop of the sample can sometimes be heard – typically as an audio clip – and this, too, forms another distinguishing feature of PCM chiptunes.

As is the case with 8-bit chiptunes, to describe some forms of chiptune as '16-bit' is also something of a misnomer. Particularly because some systems, such as the 1985 Atari ST, are 16-bit in their processing power but their PSG functions through subtractive synthesis (Paul 2014, p. 526). Conversely, some 8-bit video game consoles had the ability to incorporate FM synthesis into their hardware by way of optional expansions. The Japanese release of the SEGA Master System games console, and the subsequent the mark III release, for instance, could host the optional add-on of the Yamaha YM2413 chip. Being a member of the Yamaha FM family of PSGs, this chip afforded the system a more diverse palette for sound and music.<sup>24</sup> By comparison, the European and American releases did not have this optional add-on and, as a result, the audio of these versions was generated through subtractive synthesis waveforms.<sup>25</sup>

As is the case with 8-bit chiptunes, we can identify distinguishing characteristics for 16-bit chiptunes:

### **16-bit chiptune**

- Broader timbral range than 8-bit, but still noticeably synthesized and lo-fi
- Harmonies that do not solely rely on the telephone chord method

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<sup>24</sup> I would like to thank Graham Su for this insight.

<sup>25</sup> For the reader to hear these differences, YouTuber TheSupremeSkill has constructed demo reel of these sonic differences in action through the gameplay of SEGA's 1987 role-playing video game *Phantasy Star*, available here: <https://www.youtube.com/watch?v=zDPvSoiCAWg&feature=youtu.be>

- The use of FM synthesis for instrumental parts, often in combination with 8-bit samples for drum tracks
- Entirely PCM-based arrangements, consisting entirely of low-quality instrumental samples, sampled chords, and hard panning.

The mid-1990s saw the end of PSG-based audio synthesis in the video game industry. The ability to incorporate CD quality audio into video games emerged with the advent of such consoles as the 32-bit Sony PlayStation (1994) and the 64-bit Nintendo 64 (1996), ushering in a new era. For the first time, video game composers could orchestrate and mix soundtracks in their studios using contemporary equipment. VGM of this period had a distinctly ‘MIDI-ocre’ quality, and still underwent forms of audio compression to save space, but chiptune became obsolete as an industry standard (cf. Cheng 2014, p. 78). In amidst the commercial developments of 8-bit and 16-bit technologies in the middle of the 1980s, however, something was burgeoning both underground and in the domestic environment. In 1985 chiptune began its evolution from VGM tool to thriving fan culture, and here we come to the second widely regarded origin of chiptune as it exists today.

## **I.2 Chiptune as Participatory Culture**

Alongside the ongoing developments in video game and computer audio technology, the ‘cracktro’ and ‘demoscenes’ emerged. ‘Cracking’ was an act of piracy, stemming back to the late 1970s, in which hackers would remove the copyright protection from computer software and video games (Carlsson 2008, p. 154). This enabled the free distribution of software, as are many forms of ‘cracking’ that persists to this day. Partly, and most interestingly, cracking became a means to construct an identity and interact with like-minded others (*Ibid.*, pp. 154-5; see Tasajärvi 2004, Chapter 5). Circa 1985, hackers began to create ‘cracktros’ or ‘crack-intros,’ which involved hacking into a piece of commercial computer software or video game – in the format of cassette tapes and floppy disks at the time – and adding in new pre-game displays; like a digital form of graffiti, these displays would include on-screen text displaying the nickname of the hacker, coded messages to other hackers, pixel art graphics, and cheat menus for video games (Carlsson 2008, p. 155; Nova 2014, p. 62).<sup>26</sup> Stemming from this

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<sup>26</sup> Which would allow the user to bypass many of the video game’s mechanics, enabling such things as player invincibility and the ability to skip levels.

practice, what became known as the ‘demoscene’ emerged, which notably began to incorporate chiptune (Lysloff 2004, pp. 37-8).

A ‘demo,’ as Anders Carlsson describes it, ‘demonstrated what a user could do with a specific technology. Everything seen and heard would be generated by the computer in real-time [...]’ (Carlsson 2008, p. 155). Demosceners saw the constraints of 8-bit and 16-bit machines of the time as a challenge: an invitation to push these machines to their graphical and musical limits, and to overcome these limitations in a display of their coding skills (Nova 2014, p. 53). Demosceners would also hack into pre-existing computer software and video games, predominantly to learn how they worked and leech their assets – such as graphics and digital audio samples – for use as a creative resource (Carlsson 2010, p. 8). Sampling popular music of the time – vocal samples, percussive samples (both individual hits and rhythm loops), and instrumental samples (both individual hits and melodic/harmonic phrases) – also became a means to acquire the raw materials for new chiptune compositions (*Ibid.*).

These practices were aided by a piece of music software called a ‘tracker sequencer.’ Tracker sequencers were the means through which professionals in video game audio design crafted and consolidated VGM code – such as a MOD file. Tracker sequencers enable the user to input and edit the assembly/hexadecimal code that detailed musical information – such as that stored within MOD files – in video games and other computer applications (Collins 2008a, p. 56). In many ways, tracker sequencers were the precursor to the drag-and-drop ease with which MIDI information can be edited within contemporary digital audio workstations (DAWs).

The widespread availability of the tracker sequencer is attributed to chip-musician and VGM composer Chris Hülsbeck, who released the program Soundmonitor for the Commodore 64 in 1986, and to Karsten Obarski who, advancing on Hülsbeck’s work, created Soundtracker for the Amiga in 1987 (Carlsson 2010, p. 8). In the spirit of the subversive piracy that underpinned the demoscene, participants soon began to craft their own free versions of tracker sequencers; one such example is ProTracker for the Amiga by Hamre et al. (1990). Below is a mock-up of a tracker sequencer:

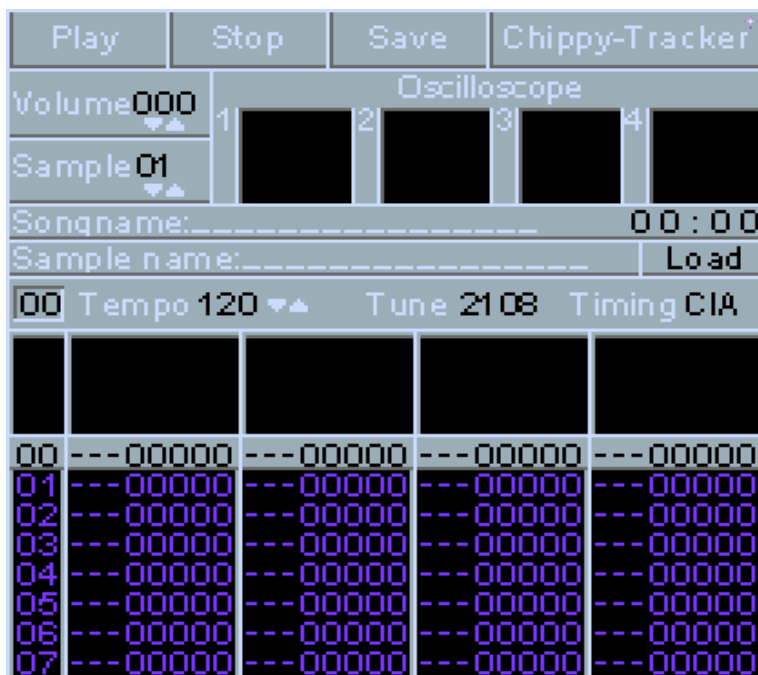


Figure 2. Mock-up of a tracker sequencer

The interface depicted above is typical of any form of tracker sequencer. Based on ProTracker, each of the four larger channels in Figure 2 represent the four monophonic audio channels the Amiga could play simultaneously. The thinner column on the far left represents the pattern number; for the composer, different patterns represented different phrases or parts of the song, such as verse and chorus. Each row is full of sequencer cells, ‘--- 00 000,’ which are spaces for musical code: a note on or off command plus effects. Where both traditional musical notation and contemporary DAWs work horizontally, tracker sequencers scroll through their codes vertically.

In order to play a C sharp Major telephone chord with middle C sharp as the root note, for example, we would have to enter the following code: ‘C#4 01 047.’ To break this code down, ‘C#4’ informs the tracker which note to play (C#), and in which register (4). The middle pair of digits in the cell, ‘01,’ indicate the instrument number – which audio sample will play at the coded pitch. The final three digits ‘047’ are where the audio effects are programmed, in this instance a rapid arpeggio. The first ‘0’ in ‘047’ is the hexadecimal command that initialises the arpeggio function and represents the root note of the chord (C#4). ‘4’ indicates the major third note above the root note (F4), four semitones above, and the ‘7’ indicates the perfect 5<sup>th</sup> above the root note (Ab4), seven semitones above. Telephone chord programming alone shows how intricate the tracker composition of chiptune can be; arranging full musical pieces with multiple effects had to be coded meticulously, digit by digit.

In response to the growing popularity of tracker sequencers, companies would also start to develop budget music software kits for the Amiga line of computers, among others. One such kit was the StereoMaster developed by Microdeal in 1991.<sup>27</sup> The StereoMaster kit included: an input cartridge that slotted into the back of the Amiga on one end, and on the other, there was an audio jack connection; a stereo-to-mono audio cable, through which the user could record the audio output from any device they wish – typically a few seconds maximum per sample – and feed it into the Amiga; and the software disk, through which they could control the recording process, edit the samples, and save custom sample libraries to disk ready to use in a tracker sequencer. Through the proliferation of such budget sampler kits and the free availability of tracker sequencer software, the demoscene began to erupt (Nova 2014, pp. 62-3). Chiptune became an accessible means to compose electronic music without, first, formal musical or instrumental training – because of the affordances of sampling, and because tracker sequencers worked on hexadecimal language and not traditional musical notation – and second, without the necessary budget, experience, or space for synthesizers and drum machines, samplers, mixers, and tape machines (see further in Carlsson 2010, pp. 7-9).

The proliferation of the demoscene saw chiptune become a very early, pre-Internet and digital example of what Henry Jenkins would later call a ‘participatory culture,’ which possesses the following qualities:

1. Relatively low barriers to artistic expression and civic engagement
2. Strong support for creating and sharing one’s creations with others
3. Some type of informal mentorship whereby what is known by the most experienced is passed along to novices
4. Members believe that their contributions matter
5. Members feel some degree of social connection with one another (at the least they care what other people think about what they have created).

(cf. Jenkins et al. 2006, p. 7; cf. Jenkins 2006a, pp. 41, 72, 82)

Chiptune became underground and partly countercultural in its practice, its subversive piracy, and zine-like distribution of cracktro and demo disks among its fans (McAlpine 2018, pp. 6-7).<sup>28</sup> Distinct and lo-fi in its sound, chiptune was worlds apart from the standards of commercial

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<sup>27</sup> See a full demonstration of ProTracker and the StereoMaster kit by chip-musician cTrix here: <https://www.youtube.com/watch?v=i9MXYZh1jcs&t>

<sup>28</sup> (See Duncombe 2005 on zines, pp. 530-40).

music production at the time, and the ethos of pushing limited machines to their musical thresholds inspired fans to play, to experiment, and to carve out their own means of self-expression (Carlsson 2008, p. 161). All these factors created a distinct subcultural community, in which PSG technologies and their emblematic timbres formed the communal gel (cf. Gelder 2005, pp. 1-3, 11-2; Nova 2014, p. 62).

While chiptune became commercially obsolete in the wake of the 32-bit generation of video game consoles, it lived on through its fans. At this time, some forms of tracker sequencers moved to Microsoft DOS and Windows formats – Jeffrey Lim’s 1995 release of Impulse Tracker, for example – where they retained the sample-based, monophonic constraints of tracker composition but without the inconvenience of slower 8-bit or 16-bit machines with less storage space. The late 1990s then saw chiptune gain what some might consider to be ‘mainstream’ attention as it began to receive radio play and be performed at music festivals (Nova 2014, p. 63). At this time, the advent of the Internet also began to impact the evolution of chiptune dramatically, affording a new means for chiptune distribution and communal interaction among its fans (Carlsson 2008, p. 160). A renewed interest in 8-bit machines also emerged, as fans began to hack into, circuit bend and modify them to make them easier to use as a tool for musical composition (Nova 2014, p. 64).<sup>29</sup>

Through hacking, the Game Boy became an iconic means of chiptune composition through the release of two pieces of technology: Oliver Wittchow’s Nanoloop in 1999, and Johan Kotlinski’s Little Sound DJ (LSDJ) in 2001, both formatted to modified Game Boy game cartridges (Carlsson 2008, pp. 160-1). Nanoloop and LSDJ adapted the hexadecimal coding principles and interface of tracker chiptune composition and used them to control the real-time generation of audio from the Game Boy’s PSG: The Game Boy Sound System (GBS). This adaptation allowed for the composer to create musical compositions as well as edit their codes in real-time as though playing a synthesizer, which led to the Game Boy becoming a staple of live chiptune performances (see in-depth in D’Errico 2012).

Present-day chiptune has far outgrown its humble beginnings, spanning a kaleidoscope of technologies, chip-musical creativity, and fan demographics. Post millennium, chiptune technology has changed in as many ways as it has stayed the same. Commodore 64s, Amigas, and Game Boys, among other formats, are still in use to this day. Recent years have also seen a boom in the emulation of 8-bit and 16-bit sound systems, both in their compositional

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<sup>29</sup> Circuit bending is the customisation of electronic music and sound devices with new modifications; a typical example sees the transformation of electronic children’s toys into musical instruments.

constraints and their timbral qualities. Many tracker sequencers from the 1980s and 1990s have been remade and remodelled to function on contemporary operating systems.

The aforementioned Impulse Tracker, for example, now lives on as Schism Tracker, which faithfully replicates the original interface in both looks and function, and the low quality PCM of its sound engine.<sup>30</sup> New forms of tracker sequencer have also emerged, designed for specific use on contemporary operating systems. Leonardo Demartino's 2011 tracker sequencer DefleMask is such an example, which offers the emulation of, among others, the SEGA Megadrive FM YM2612 chip, the NES Ricoh 2A03 chip, and the Commodore 64 SID.<sup>31</sup> Moreover, DefleMask allows the user to export their compositions in the file format used by original 8-bit and 16-bit hardware, so they have the convenience of composing chiptune on an up-to-date system but can enjoy the satisfaction of hearing their work emit from the original hardware.

The rise in virtual studio technologies (VSTs) have also enabled fans to explore chiptune or continue their chip-musical practices without the cost, technical skill, and maintenance of original 8-bit and 16-bit machines. VSTs are either standalone software instruments or plugins that can be opened as part of a DAW project. A plethora of VSTs that emulate PSG oscillators are now widely available, often boasting the ability to grant access to chiptune timbral qualities without the constraints of limited monophonic audio channels, the need to learn hexadecimal code, and with the new affordance of playing these sounds via contemporary MIDI controllers.

Chiptune VSTs – or chip-synths – can either be more general or specialist in their emulations. The former typically emulates the general character of 8-bit bleeps and bloops, such as Roland's aptly titled Blip Blop: a subtractive synthesizer that evokes the timbral character of 8-bit PSGs in the promise of a 'resurrection' of 'nostalgia for the golden age of video games' (2020).<sup>32</sup> F-MDRIVE 2612 by Aly James is a more specialised example, which strives to closely replicate the SEGA Mega Drive's YM2612 chip in every detail in combination with the affordances of modern DAWs, MIDI devices and interfaces, and music production effects.<sup>33</sup> The emulation of chiptune systems and sounds gave way to what became known by some as 'fakebit' – a play on '8-bit' – which described chiptunes composed by contemporary means, or without coding and the original hardware constraints (see

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<sup>30</sup> <http://schismtracker.org/>

<sup>31</sup> <https://www.deflemask.com/>

<sup>32</sup> <https://www.rolandcloud.com/catalog/flavr/blipblop>

<sup>33</sup> <https://alyjameslab.com/alyjameslabfmdrive.html>

Polymeropoulou 2014). At one time, this became a point of contention between some practitioners but, in the present day, the definition of what ‘is’ or ‘is not’ chiptune is not so hotly contested (Polymeropoulou 2014; Carlsson 2010, p. 11; Nova 2014, p. 64).

The affectionately ‘cheap’ ethos of the demoscene also lives on. Amiga MODs and other forms of original VGM files are now freely available from online repositories – such as *The Mod Archive* – which keeps alive the practice of extracting codes and instruments as a creative resource.<sup>34</sup> Like the trackers that came before, many chiptune VSTs are also free.<sup>35</sup> Chiptune can be made on the go using iPhone versions of tracker sequencers and on websites such as *Beep Box*, which allows anybody with an internet connection to play around with 8-bit and 16-bit sounds using the sensibilities of contemporary point-and-click MIDI arrangement.<sup>36</sup> In addition, not all those who enjoy chiptune are composers; many just enjoy attending live performances and listening. No longer reliant on video game play, cassette tapes and floppy disks, chiptune is now something that, at the touch of a button, can be streamed instantaneously through smartphone apps and through Internet browsers, and organised into playlists.

The creative output of chiptune today is in complete explosion. Mike D’Errico’s exploration of chiptune creativity centres primarily on live performances, but he does provide some useful categories that help us to grasp its contemporary diversity (2012). The first category are ‘textual’ chiptunes (*Ibid.*). Textual chiptunes refer to original chipmusic made – or performed live – using a single piece of chiptune technology. As D’Errico explains, ‘textual’ forms of chiptune creativity – sometimes referred to as ‘pure chiptune’ – are typically composed in the same vein as original chiptune video game soundtracks, or in the spirit of the cracktro and demoscene ethos of creativity through constraint and pushing the limitations of PSG processing (*Ibid.*). Fearofdark’s ‘Flame Repellent,’ while composed using an emulation of the NES’s 2A03 PSG, is an example of this form of creativity.

The other category that D’Errico identifies is ‘intertextual chiptune’ (*Ibid.*). For D’Errico, intertextual chiptunes combine their defining constraints and timbral qualities with other musical technologies. In the context of a live chiptune performance, this can involve intergenerational mixtures of both 8-bit and 16-bit hardware, VSTs, and any other forms of music technology and audio processing means. Many chip-musicians, for instance, perform

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<sup>34</sup> <https://modarchive.org/>

<sup>35</sup> As listed on the Transverse Audio blog: <https://transverseaudio.com/posts/best-free-chiptune-vst-synths> and the Woolyss blog site: <https://woolyss.com/chipmusic-plugins.php>

<sup>36</sup> <https://beepbox.co>



using only a Game Boy running LSDJ, but they often run the audio output of the Game Boy through external effects processors.<sup>37</sup>

Here, D'Errico's definition of 'intertextuality' can be extended because chiptune creativity also reaches out into innumerable genres and musical remix practices (cf. Tonelli 2014, pp. 413-4). Under the umbrella of contemporary chiptune, there are such subgenres as Nintendocore,<sup>38</sup> bitpop,<sup>39</sup> chip-hop,<sup>40</sup> and 8-bit Jazz. Chiptune remixes and cover versions also form a prominent part of chiptune creativity and reach into almost any (sub)genre and pre-existing media franchise imaginable. There are 8-bit rearrangements of Debussy's 'Rêverie'<sup>41</sup> and bitpop remixes PSY's 'Gangnam Style'<sup>42</sup> (1895; 2012). There are MSX<sup>43</sup> covers of John Carpenter and Alan Howarth's title music for the 1981 film *Escape From New York*,<sup>44</sup> and 16-bit FM conversions of Brad Fiedel's title theme for *The Terminator* (1981; 1984).<sup>45</sup> Soundtracks from post-chiptune video games are remixed and rearranged in bleeps and bloops, such as Lorne Balfe's title theme to the 2012 video game *Assassin's Creed III* (2012; Ubisoft 2012).<sup>46</sup> Title themes from television series also become re-presented in chiptune, such as Ron Grainer's iconic theme for the BBC science fiction television series *Doctor Who*,<sup>47</sup> Ramin Djawadi's majestic orchestral theme for HBO's *Game of Thrones*,<sup>48</sup> and David Croft and Roy Moore's melancholic waltz for the sitcom 'Allo 'Allo! (Ron Grainer 1963; BBC 1963; Djawadi 2011; HBO 2011; Croft and Moore 1982; BBC 1982).<sup>49</sup>

In addition to the broad creative output of contemporary chiptune, its demographics are similarly heterogeneous. Fans who discovered chiptune through the demoscene still participate and perform to this day; those who were not even born at the time of the cracktro/demoscenes and the 20<sup>th</sup> century evolution of video games are still discovering chiptune and retro games culture (cf. Carlsson 2008, p. 162; Nova 2014, pp. 64-5). Chiptune fan communities are global and 'glocal' through the communal outreach afforded the proliferation of social media and

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<sup>37</sup> Nick Maynard demonstrates such a chiptune performance on his YouTube channel, in which his LSDJ programming is manipulated by a Korg Monotribe and a Korg Kaoss Pad in real-time. Available here: <https://www.youtube.com/watch?v=OiDtv0yHUDg>

<sup>38</sup> An integration of chiptune with heavy metal and punk music.

<sup>39</sup> An integration of chipsounds with other electronic instrumentation.

<sup>40</sup> An integration of chiptune with hip hop.

<sup>41</sup> Available here: <https://www.youtube.com/watch?v=7-hVzj0Y72U&t>

<sup>42</sup> Available here: [https://www.youtube.com/watch?v=4wqo\\_xcUdv0](https://www.youtube.com/watch?v=4wqo_xcUdv0)

<sup>43</sup> A 1983 8-bit computer, whose PSG was almost identical to that of the ZX Spectrum.

<sup>44</sup> Hear Dracula9AntiChapel's arrangement here: <https://www.youtube.com/watch?v=LSv7qwDzOKM>

<sup>45</sup> <https://www.youtube.com/watch?v=m00vPqFEf-c>

<sup>46</sup> An 8-bit remix can be heard here: <https://www.youtube.com/watch?v=4haP8wCoGeY>

<sup>47</sup> Available here: <https://www.youtube.com/watch?v=ELK9Vkt7zqw>

<sup>48</sup> Available here: <https://www.youtube.com/watch?v=mPNYxKec3tE>

<sup>49</sup> Available here: <https://8bitarcade.bandcamp.com/track/allo-allo-main-theme-8-bit-computer-game-version>

dedicated chiptune websites, which act as vehicles for chiptune distribution, discussion, tutorials, and contribute to the discovery of chiptune by newcomers (cf. Wellman 2004, pp. 26-9). Despite chiptune's ever-growing and heterogeneous fan demographic, all are brought together by their admiration of creativity through constraint, the 'soul' of obsolete technologies, and little sounds with a unique 'spirit' and big emotional power (cf. Collins 2008a, pp. 209-27; Paul 2014, p. 508).

### **I.3 Chiptune: Research Questions**

The words of a chiptune fan can help to introduce the focus of this study. As a part of this study's research process, a survey on chiptune was conducted among various online communities (see further below in methodology). When asked about their enjoyment of chiptune, survey participant 56 shares the following:

To be honest, I just find chiptunes to be intrinsic to who I am today. Just as someone might grow up listening to a song in their childhood and know it for the rest of their life, I was growing up with music from games and computers. I was fascinated by the progress that was constantly being made in that arena and even as a kid delved into hardware and software anytime I could. I still have a passion for knowing how things work, and I enjoy finding new and interesting sounds to play with. (Age category 36-45, see appendix, p. 229)

Participant 56 is undeniably a fan of chiptune. Chiptune is passionately and intrinsically woven into their sense of self and belonging, having entered their lives from a tender age and grown along with them; its constrained technologies and 'beepy boopy sounds' continue to play an integral role in both their musicality and their self-expression (cf. Hills 2002, pp. viii-xv; Brooker 2002, p. 93; Sandvoss 2005, pp. 8-9, 95-113; Jenkins 2013, pp. 223, 267, 277-81; Duffett 2013, p. 30). Chiptune's ability to form such an intrinsic part of a fan's sense of 'who they are today,' as participant 56 puts it, and the ways in which chiptune continues to form such an important touchstone in the ongoing formation of identity, is the interest of this study.

This thesis explores the relationship between chiptune and what Mark Duffett calls 'personal fandom,' which refers to the 'fannish identity and experience of an individual person' (2013, pp. 24-5; cf. Sandvoss 2005, p. 9). A founding notion underpinning the research field of fan studies is that fans 'construct' or 'shape' a coherent sense of self-identity and belonging through the media they choose to create and consume (Grossberg 1992a, pp. 50-64; Lewis

1992, p. 9; Hills 2002, p. 52; Sandvoss 2005, pp. 30, 96, 162; Jenkins 2013, pp. 1-9; Duffett 2013, pp. 2-3, 18; Hills 2018, p. 19). Music has long since been understood as such a medium: a ‘technology of the self’ through which we construct, perform, and negotiate ‘who we are’ and ‘who we want to be,’ and affirm our (sub)cultural belongings (DeNora 2000, pp. 46-75; Cook 1998, p. 5; Frith 2002, pp. 108-25). Many of us can testify to the ways in which music has formed ‘the soundtrack to our lives,’ as it so intensely and profoundly conjures a sense of self and community, revitalises our memory, and mediates our moods and wellbeing (Davidson and Garrido 2019, pp. 1-4; Frith 2002, p. 110; DeNora 2000, pp. 82-3; Kassabian 2013, p. xxviii; see also Weisethaunet and Lindberg 2010, p. 477).

On this premise, this thesis aims to shed light on the following research questions:

1. How are fan identities shaped through musical interactions with chiptune?
2. Through which musical process does this ‘shaping’ take place?

In which ways does chiptune shape the identities of its fans? How has chiptune so profoundly shaped participant 56’s sense of self, as well as that of many others, and what does chiptune continue to do to maintain these relationships? What are the mechanisms through which it does so, and what is meant by the ‘shaping’ of identity in both a musical and fannish context? Given the nature of these questions, this study is not concerned with classifications: for instance, defining what chiptune fan identity is or is not, who chiptune fans typically are or are not, or what chiptune fans typically do, or do not do, musically (cf. Hemphill et. al. 2018, pp. 41-6; cf. Hills 2002, pp. xi, 7).<sup>50</sup> To answer the research questions posed above, this study centres its analytical sights on chiptune fan identity in *musical play* and does so by taking a relational ontological approach.

‘Relational ontology’ is a philosophical stance that contends the ‘relations between entities are more ontologically fundamental than the entities themselves’ (Wildman 2010, pp. 55-6). In other words, rather than understanding entities in a unitary and individualist light – as singular, autonomous, and unchanging substances possessing inherent qualities – relational ontology looks to the ways in which the qualities and efficacy of a particular entity rely upon, and emerge through, interactions with other entities (Sidorkin 2002, p. 91). Under this lens, identity would not be understood as an inherent quality or position – such as an ‘inner authentic

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<sup>50</sup> In this study, ‘chiptune fan identity’ captures all ways in which chiptune can become affirmatively interwoven with a sense of self, fondness, and belonging – in *any* capacity and intensity.

self’ – but rather as something that is *socially* defined (cf. *Ibid.*). The task of relational ontology would be to then trace and analyse the interactions between self and other – at times taking place on multiple levels simultaneously – through which notions of identity emerge and experiences of identification are embodied (see Williams 2010, pp. 245-62; Morfino 2014, pp. 46-71). This approach can directly apply to the relationship between fan identity and musical performativity.

Music fan identity is not an inherent disposition, but an *activity* (cf. Hennion 2008, pp. 41-6); it is shaped *in situ* of musical play, as music acts ‘with and upon our phenomenological worlds’ (Kassabian 2013, pp. xxiv-xxvii; DeNora 2004, p. 217; Prior 2013, p. 189; cf. Thompson and Biddle 2013, p. 17; cf. Hemphill et. al. 2018, pp. 49-50). Music *changes* and *produces* us, rather than reflects us (cf. Frith 2002, pp. 108-11). Discussing music and identity, musicologist Anahid Kassabian argues that we should stop analysing music as ‘an object external to us,’ and instead as an affective and dynamic relationship in which we are immersed (2013, pp. xv, xvii-xviii; see also Small 1998, pp. 1-18; DeNora 2000, p. 8). Grasping the relationship between identity and music thus requires a shift in focus from definition, and reductive distinctions between subject/object, to ‘how identity actually *happens*’ through the ‘stirring of bodies’ as musical play unfolds – moment by moment (Kassabian 2013, pp. xviii, xxvii, 112, emphasis added; Hennion 2008, pp. 41-4; Peter 2014, pp. 45-8, 50-1).

As Kassabian elaborates, identity does not ‘reside within a single subject; rather, it is a flow across a field, which constantly morphs into different shapes and contours, depending on the circumstances. [These fields] might be constituted of body parts, or verbal texts, or sounds, or machines, or groups, and most likely all of the above’ (2013, p. xxvii; cf. Stanyek and Piekut 2010, p. 18). When analysing music and identity, Kassabian thus calls for us to take into consideration all material elements that constitute the field – or network – of a musical performance in their convergence, be they our own bodies and our memories, the bodies of musicians or other audience members, lighting rigs, acoustic properties of the venue, music technologies, and sound itself (2013, p. xxiv; see also Small 1998, p. 10; cf. Thompson and Biddle 2013, pp. 15-9). This is a key aspect of relational ontology: to take into consideration the roles of non-human agencies *as well as* human ones, avoiding the essentialism of both technologically deterministic and anthropocentric approaches (cf. Latour 2005, pp. 72-6).

Interrogating identity in such a way, however, raises a number of what Roger Silverstone calls ‘essential tensions’ (1994, p. x). Essential tensions are Silverstone’s acknowledgement of a ‘dialectic at the heart of all social reality. [That] all social life is, in all its manifestations, *essentially*, in constant and productive tension’ (*Ibid.*, emphasis in original).

Such tensions might include those between structure and the possibilities for action, between activity and passivity, between agency and constraint, and between the individual and the social (*Ibid.*, pp. x, 5, 108, 131; cf. Hills 2007, p. 45). Identity is primarily bound up in the essential and *productive* tensions between ‘becoming and being’ (Sterling 2012, pp. 1-2).

It has long since been established in philosophy and cultural theory that identity is a moving target in a continual process of becoming: mobile, complex, multitudinous, fluid, and potentially changing with every relational encounter (*Ibid.*, p. 2; Wolff 2005, p. 227; cf. Frith 2002, p. 109). Identity is performative and unstable, upheld by repetition and ritual (Butler 1990, pp. xv-xxvi, 34; see Goffman 1959). Identity is also only ever grasped in retrospect: it builds as the residual intensities of our non/human relations accrue in our memories and muscle fibres (Kassabian 2013, p. xxvii). Fan studies, too, have recognised that fan identities are webbed in relations between the individual and the social, and internal and external forces (Duffett 2013, p. 27; Duffett 2014, p. 7; Shuker 2014, pp. 177-8; Peter 2014, p. 51). Fan identity is performative, it emerges in and through – and is potentially changed by – play, and it is not a singular site or ‘destination’ like somewhere we ‘end up’ being, but an ongoing ‘intertextual, cultural and affective’ journey (Hills 2002, pp. xi, 90-5, 121; Hills 2014, pp. 19-20).

Yet, aspects of ‘being’ – notions of origins, continuity, and stability – are also integral to identity (Sterling 2012, p. 2). As identity accrues retrospectively, we mnemonically organise certain aspects into narratives and personal values. These values, too, also feed into the ways in which our identities are shaped thereafter. Sociologist Anthony Giddens highlights the importance of such notions: while an individual’s identity may be fragmented and subject to constant flux, they still typically experience and narrate it in terms of its wholeness and ‘authenticity’ (1991, pp. 71-80, 92). This he calls ‘ontological security,’ which refers to an individual’s sense of confidence and trust in the continuity of their self-identities and ‘the constancy of the surrounding social and material environments of action’ (*Ibid.*, p. 92). Ontological security ‘has to do with being or, in the terms of phenomenology, being in the world’ (*Ibid.*). This concept has also been used in fan studies to describe the relationships between fans and the objects of their fandom, in which the semi-ritualistic nature of their interactions can engender – for the fan in question – a sense of stability and security in their own identities as well as their communal belongings (see Silverstone 1994, pp 5-8; Hills 2007, pp. 43-6; Williams 2015, pp. 20-33). Ontological security, however, is never stable and is ‘threatened by external factors’ (Giddens 1991, pp. 40)

The becoming and being of fan identity is not as dichotomous as we might first assume. As Daniel Cavicchi put it: ‘fandom is a process of being,’ which captures the simultaneity of

movement and relationality, and the convictions of ‘the way we are’ that emerge *through* these processes (1998, p. 59; Duffett 2013, p. 30). Fan identity – like any form of identity – is neither wholly individual, nor reductively social; the self emerges *with* other (cf. Kassabian 2013, p. xvii; see Haraway 2008, p. 244). The essential tension of fan identity, then, is that its ‘being’ is shaped *through* processes of ‘becoming.’ Or, to frame it another way: the experiential stability and continuity of fan identity is dependent on non/human relations that are unstable, often paradoxical and contradictory, and predominantly unpredictable. Analysing the relational ontology of fan identity necessarily requires the recognition and the navigation of such essential tensions. The reasons being that not only do they present the researcher with theoretical and methodological hurdles to overcome, but they also help to reveal the complex interrelatedness between the structural and the agentic, the internal and the external, and the human and non-human elements that shape the manifestation of identity.

With these insights in mind, it was necessary to construct an analytical framework that allowed me to trace and analyse the relational ontology of chiptune fan identity in musical play, identify the roles that chiptune’s human and non-human components play in the process, and how they musically interact with one another, and model chiptune fan identity *itself* in a way that accounts for and navigates the essential tensions integral to the process. However, these considerations – particularly the shaping of fan identity in musical performance and the roles of both human and non-human elements – are markedly absent in both current research into chiptune and the broader research field of music fan studies (cf. Stein 2009, p. 193; Duffett 2014, p. 5; Hills 2014, pp. 16-20, 32; Getman and Hayashi 2016, pp. 135-40; Morris 2018, pp. 356-9).

#### **I.4 Research into Chiptune and Music Fandom**

In his 2007 thesis *The Sound of Playing: A Study into the Music and Culture of Chiptunes*, Yabsley points to the lack of critical and academic research into chiptune, citing that most of the attention it received at the time was largely journalistic or dismissive (p. 1). A key factor in this research hiatus, Yabsley contends, is that chiptune’s playful and novel connotations might lead some to assume that it has little cultural relevance as a musical genre and practice (*Ibid.*, p. 1; cf. Zimmermann 2003, p. 3). Carlsson also points to the scarcity of chiptune studies in his 2010 thesis *Power Users and Retro Puppets: A Critical Study of the Methods and Motivations in Chipmusic*, citing the ever-shifting cultural relations and expansive practices that form the rubric of ‘chiptune’ (p. 6). In the decade since these studies, chiptune has slowly gained some analytical traction among academic circles but remains largely overlooked in

comparison to other multimedia and musical practices, often finding itself dispersed within a larger research field.

In comparison to other disciplines and research fields, the academic consideration of VGM and sound is still relatively young (cf. Donnelly, Gibbons, and Lerner 2014, pp. vii-xii). Pioneered by Zach Whalen's studies into the relationship between video game play, sound and music, and Collins' comprehensive history of VGM and sound, the research field of 'ludomusicology' emerged in the early 2000s (Whalen 2004; Whalen 2007; Collins 2008a, pp. 7-63; Collins 2008b, pp. 1-10). Ludomusicology, a portmanteau of 'ludo' (to play) and musicology (the academic study of music), explores the ways in which we play and play with VGM and sound – both within and beyond the context of the video game – and is a burgeoning research field undergoing rapid development (see Miller 2012, pp. 3-19; Collins 2013, 'Introduction;' Cheng 2014, pp. 3-18; Kamp, Summers, and Sweeney 2016, 'Introduction;' Moseley 2016, 'Introduction').<sup>51</sup> Given its roots in VGM history, chiptune has rather naturally found its place in ludomusicological research – either as a case study in a broader analysis of VGM play and interactive audio, or as a standalone chapter within an edited collection (see Fritsch 2016, pp. 92-111).

What little research does exist solely on chiptune, either as a standalone thesis or as part of a broader ludomusicological study, typically centres around the topic outlined in section I.1: its technological and (sub)cultural history. With a focus on chiptune and its relationship with individual identity largely overlooked, these studies either meticulously detail the development of microchip audio technologies (Collins 2008a, pp. 7-59), or they map the intertwining relationship between chiptune's technological and (sub)cultural genealogy to the present time of their publication, often speculating as to its future (see Lysloff 2004, pp. 23-63; Carlsson 2008, pp. 152-62; Driscoll and Diaz 2009; Nova 2014, pp. 61-5; Paul 2014, pp. 509-30; McAlpine 2018, pp. 2-7, 158, 258).

Carlsson's thesis on chiptune, mentioned above, is a prominent example of this research theme and one of the most prolific studies into chiptune (sub)culture to date. Carlsson employs an encyclopaedic historical approach with a sociological one, in which technical specifications are intertwined with chip-musician interviews, online discussions between chiptune fans, and an autoethnographic insight into his own experiences as a chip-musician (Carlsson 2010, pp. 6-13, 21-5; cf. Lysloff 2004, pp. 24-5; cf. Yabsley 2007, p. 1, 4, 13-15). Carlsson's research provides insight into the main motivations behind chiptune's continuing practice, which he

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<sup>51</sup> (cf. Huizinga 2014, pp. 1-45; cf. Juul 2005, pp. 15, 164-5).

identifies as the following motivations: anti-nostalgia (in which chip-musicianship is fuelled by childhood video game memories, but these sentiments are transformed into something new), control (in which the constraints of chiptune technologies offer musicians a greater sense of comfort), hacker aesthetics (a desire to push the boundaries and limitations of chiptune technologies), and digital economics (an enjoyment of creativity through deliberately constrained resources) (2010 pp. 42-50; cf. Yabsley 2007, p. 20).

Carlsson's methodology can be described as 'what and why:' with 'what' tracing the history of chiptune technologies and practices, and 'why' building a sociological repertoire and consensus of the reasons for chiptune's participation from a selected pool of chip-musicians. Such a methodology, however, presents two problems that are true of all current chiptune research. First, focusing on the descriptive, it appears to lack theoretical depth (see Kummén 2018, p. 18). For instance, there is a section within Carlsson's thesis entitled 'immersion,' in which he provides a brief consideration of the musical interactions between chip-musicians and PSG technologies (2010, pp. 37-9). Here, Carlsson discusses the 'immediacy' chiptune technologies generate which, while also confusingly conflated with the term 'immersion' in this passage, is described as a sense of direct connection to chiptune's personal attachments and enjoyable qualities (*Ibid.*, pp. 37, 39). This process, he writes, is 'techno-social:' something happens *between* chip-musician and PSG (*Ibid.*). Yet, the interaction between chip-musicians and technology for this sense of immediacy to take place, and how this immediacy informs the forms of discourse that Carlsson identifies, moreover, requires further expansion. Second, Carlsson's ethnographic data entirely consists of chip-musicians and privileges the voices of male practitioners. This limited pool fails to represent the heterogeneity of chiptune culture and, as a result, we miss out on identifying other potential forms of attractions and motivations that drive its participants.

Other prominent topics that appear in chiptune research are its relationships with 'authenticity' and nostalgia – thorny issues in both chiptune analyses and fan discourse.<sup>52</sup> The subject of 'authenticity' among chiptune participants is given prominent attention in the work of Marilou Polymeropoulou, whose article *Chipmusic, Fakebit and the Discourse of Authenticity in the Chipscene* explores the ways in which the discussion of 'authenticity' among chiptune circles has shifted with every generation of participants (2014; see also Tomczak 2008, pp. 1-4). Adopting the same methodology as most chiptune research – the

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<sup>52</sup> As 'authenticity' is a subjectively ascribed, socially mediated, and unstable musical quality, it will appear in quotation marks throughout this thesis (see Taruskin 1995, pp. 21, 100).



sociology of what and why – Polymeropoulou importantly highlights how notions of ‘authenticity’ are not restricted to owning and using original chiptune hardware (2014). She emphasises that chiptune timbre, regardless of its source, can also trigger convictions of ‘authenticity,’ and that hardware-based chiptune and fakebit alike can evoke notions of ‘authenticity’ through the deliberate musical use of PSG constraints (*Ibid.*). This said, the analytical approach is, once again, description and definition: on what chiptune *is* and how it can be defined rather than what its technologies and timbres *do* to engender the ‘authenticities’ discussed in Polymeropoulou’s work. There is also room for further exploration into how notions of ‘authenticity,’ and their musical conjuration, are important to the shaping of fan identities.

Given that chiptune seemingly thrives in the romanticisation of obsolete technologies and the video game sounds of yesteryear, chiptune and nostalgia are seemingly inseparable (cf. Boym 2001, p. 7). Chip-synth VSTs – such as Roland’s Blip Blop – are advertised with the promise of being able to revitalise video gaming memories and, as Jesse Harlin puts it, warp listeners ‘backwards in time to the blips and bloops of simpler days’ (Harlin 2011). In the journalistic attention chiptune has attracted, there is a dichotomy: chiptune in the present day is either entirely about the nostalgia for the video games participants played during childhood (Scheraga 2007), or the insistence that chiptune ‘moves beyond’ a rose-tinted affection of the past as a ‘legitimate’ practice with artistic merit (Robertson 2012).

Academic research into chiptune typically acknowledges that some participants are nostalgic for the video games of their childhood, but these studies also have a preoccupation with proving or emphasising that chiptune is ‘more than just nostalgia’ and novelty (Yabsley 2007, pp. 1-3; Carlsson 2010, p. 43; Tonelli 2014, p. 413; McAlpine 2018, pp. 2, 257).<sup>53</sup> Yabsley goes so far as to imply that nostalgia is not an important factor at all and argues that there is something ‘more than’ nostalgia driving chiptune, but what this ‘more than’ is and how it becomes a driving force in chiptune practice, however, is not clearly defined (see 2007, p. 13, 27).

Carlsson’s thesis, however, does provide some useful insights into the relationship between chiptune, nostalgia, and ‘authenticity’ through his framework of ‘nostalgia, hauntology, and essentialism’ (2010, p. 19).<sup>54</sup> He argues that chiptune is fundamentally haunted

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<sup>53</sup> Superbyte Festival – a ‘retro chiptune and gaming festival’ – emphasises that its participants can expect ‘nostalgia to take a backseat’ in view of ‘forward-thinking creativity.’ See the description here: <https://www.list.co.uk/event/425594-superbyte-festival/>

<sup>54</sup> ‘Essentialism’ is Carlsson’s equivalent to ‘authenticity.’

by its techno-cultural history, which is an astute and valid understanding of its continued practice and fannish enjoyment (*Ibid.*, pp. 43-4). However, a key issue arises when he claims that this haunting is different to nostalgia. Carlsson limits his definition of nostalgia to the fond memories of childhood video games, which is empirically problematic because of chiptune's ever-shifting participant demographics. As mentioned above, younger generations are discovering chiptune now more than ever; we might assume that younger chiptune fans cannot possibly be nostalgic as they did not live through the 70s, 80s, and 90s (cf. Nova 2014, p. 79). Yet even these younger generations of fans have expressed an enjoyment of chiptune for nostalgic reasons, which prompts us to look further at what, exactly, chiptune *does* to listening fans (see further below).

Citing chip-musician and programmer Linus Åkesson, the reason Carlsson gives for the differentiation between nostalgia and hauntology is that chiptune is a 'living genre' (*Ibid.*). I argue Carlsson is incorrect here on this differentiation. Hauntology and 'haunting' describe the *return* of elements from the past, regardless of whether that subject is 'living' or not (cf. Derrida 2012, pp. 57, 202). Chiptune nostalgia *is* a conjuration, a haunting, and all music – regardless of its age or whether its genre is 'alive' or not – is a powerful means through which memories and connotations of the past can erupt into the present. Notions of 'authenticity' also become relevant to this discussion and require further attention because if, as Polymeropoulou emphasises, chipsound timbre is also an agent of such convictions, then chiptune timbre can be understood to haunt the listener with these connotations.

At present, the only study to consider the relationship between chiptune and identity is Nicholas Nova's *8-Bit Reggae: Collision and Creolization*, which explores the intertextual merge between chiptune and reggae music (2014, pp. 15, 78-9, 81). Nova's exploration of 8-bit reggae is methodologically inspired by Paul Gilroy's approach of 'roots and routes': it traces the history (roots) and its development (routes) of 8-bit reggae (*Ibid.*, p. 18; Gilroy 1993, p. 8). Similar to the 'what and why' methodology of most chiptune studies, Nova's can be described as 'what and where.' Most of the book is spent on the 'roots' of both chiptune and reggae, before then following the methodology of most sociological explorations of chiptune to date: documenting the convergent 'routes' of both technological and (sub)cultural factors (Nova 2014, pp. 25-65). The last section of the book is the most interesting, but also the shortest.

In the last section of Nova's monograph, he presents an insight into the motivations of 8-bit reggae artists through in-depth interviews. These interviews are rich with insight, and there are interesting discussions about the ways in which PSG technologies and timbres, and Jamaican diaspora have become intertwined within the identities of 8-bit reggae artists, and the

ways in which chiptune's technological constraints and their reggae programming allow them to 'get back to [the] roots' of their identities and their belongings (*Ibid.*, pp. 79-91; cf. Carlsson 2010, p. 10). However, Nova often takes the reader to the edge of new insights into the relationship between chiptune practices, sounds, and fan identities – and, moreover, how chipsounds mix with reggae tropes in the process – but then stops or moves on to a different point, leaving fuller discussion for others to pursue in a later work (cf. *Ibid.*, p. 96). The focus overall is directed more towards describing the community of 8-bit reggae, rather than how both chiptune and reggae come together to co-shape and co-amplify a sense of identity for 8-bit reggae artists.

Insights from the field of music fan studies are also integral to this study, and many important critiques have been levelled at the approaches of its scholars. Matt Hills argues that research into music fandom tends to be one-dimensional as it often sets its sights on a single aspect of music fandom, such as the relationship between fan and musical artist (2014, pp. 17; cf. Morris 2018, p. 357). He emphasises that fandom is only rarely oriented towards a singular aspect or object (Hills 2014, p. 32). As Jessica Getman and Aya Esther Hayashi point out, music fan studies tend to either draw from pre-existing fan studies into visual forms of media fandom or use Jenkins' work on FILK (a fannish musical practice that plays with aspects of media narratives) as a theoretical basis, which leads them to be outdated (2016, pp. 135-7; cf. Jenkins 2013, pp. 250-80). In addition, these studies highlight the ways in which music is often treated – rather problematically – as an aural 'object' (Getman and Hayashi 2016, p. 137). Getman and Hayashi argue that, instead, music fan studies should not approach music as an 'object' but rather as action – in something that fans *do* and in which they participate (*Ibid.*).

Music fan studies, moreover, also tend to omit the roles of music technology and sound in relation to fandom. (cf. Hills 2014, pp. 16-20; Morris 2018, pp. 356-8). Louisa Stein argues that studies into music fandom should consider the ways in which the affordances and the constraints of music technologies shape fan experiences (2009, p. 183). Given that chiptune thrives in the obsolescence of late 20<sup>th</sup> century micro-musical technologies, it provides an apt case study through which to address Stein's point. Raising a similar issue, Jeremy Wade Morris argues that the understanding of what music and sound do to 'spark and maintain' fan relationships is still a neglected study focus (2018, p. 357). By addressing the relationship between chiptune and fan identity, this thesis also aims to shed light on the important omissions identified by Morris.

## **I.5 Methodology, Analytical Framework, and Chapter Overview**

The research aims of this study required a move beyond an entirely historical and sociological approach to chiptune, from ‘what and why’ and ‘what and where’ methodologies, towards a ‘what and *how*’ approach (cf. Clarke 2008, p. 121). This also necessitated branching beyond the theoretical scopes of previous chiptune research, as well as ludomusicology and (music) fan studies more broadly, but their insights – and highlighted omissions – provided some useful theoretical starting points. To begin building on these insights, I began researching around the areas of ludomusical performativity; non/human interactions in music; hauntology; and the fluid and complex relations between of identity, performativity, and affect. The main grounds of the analytical framework developed through this thesis, however, primarily emerged through occupying an ‘aca-fan’ position, the use of ‘autoethnography,’ and the collection and subsequent analysis of empirical data. First, I would like to define these terms and outline my data collection methods.

### ***I.5.1 Methodology***

‘Aca-fan’ – or ‘scholar-fan,’ as some call it – refers to a researcher who occupies the hybrid position of both an academic, and a fan of the object and/or part of the fan community they study; aca-fans, by choice and experience, are fans *first* (Hills 2002, pp. 11-6; Jenkins 2013, pp. 4-6; Duffett 2013, p. 289; Busse 2018, p. 9). On this concept, Jenkins – arguably the original self-proclaimed aca-fan – states that he does not think ‘we can study popular culture in any form, let alone something like fan culture, from the outside looking in [...]. There are questions we can only answer by examining our own emotional experiences with forms of culture that matter to us’ (2013, p. xii). In their work on online fan fiction communities, Karen Hellekson and Kristina Busse similarly claim that aca-fans ‘reflect [fan communities] and [their] concerns far better than any outsider ever could,’ and that ‘[being] embedded in a community – which we nevertheless study critically – can provide a useful approach, and a sketch of our subject position is necessary to situate [our study]’ (2006, p. 24).

Typically, the acknowledgement of this subject position is depicted through the researcher’s own account of their fandom, which I will happily share (cf. Jenkins 2013, p. xiii). Like survey participant 56, and many others out there, chiptune is intrinsically woven into who I am today and continues to act as a source of identification, expression, empowerment, and belonging for me – particularly as a fan who identifies as queer. In fact, chiptunes – and Amiga chiptunes specifically – are my earliest musical memories, and I encountered them through video games. Chiptune set the flame to the taper of my imagination as a kid, bringing into

reality, beyond the flickering images on our humble Amiga 1084 monitor, beautiful new horizons in which I could play. Chiptune made my emotions erupt as I acquainted myself with my in-game avatars, and the colourful casts of friends and foes we encountered in our travels. Chiptune helped immerse me into the lunacies of in-game worlds and their logic; the intensities of their imagery and sonorous life are still grafted into every cell of my body.<sup>55</sup>

At that time, video games were a little too expensive for our budget. Fortunately, a man my father knew – affectionately called ‘Dodgy Darren’ by his friends – was on hand. Like a spiv of multimedia piracy, Dodgy Darren managed to source us Amiga floppy disks containing cracked games at a much more reasonable price. As I explained in section I.2, many of these disks contained cracktros and demos. Consequently, circa 4 years of age, the (then) underground world of demoscene chiptunes entered my musicality and made a lasting impression. Other musical influences were also fusing into my body at the time. At home, my mother and father would often play such bands as Level 42, Talk Talk, Love and Money, and Tears for Fears; my first primary school teacher would play ‘chill out’ albums as we worked, through which I encountered and absorbed the musicality of Jan Hammer, Vangelis, Clannad, and Enya; I also became hooked on *Doctor Who* thanks to my father’s love for the show, and Keff McCulloch’s 1987 arrangement of the main theme became a childhood lullaby. Even then, these influences seemed to gel naturally with my love of chiptune.

I became a chipmusician in my teens and continued to draw on the residual fibres of my childhood memories, musically weaving them into new forms of expression. To this day, these traces remain special to me. Since, my tastes have grown in both chiptune and other forms of music, but the Amiga’s PCM synthesis still has a prominent place in how I musically express myself. I also thoroughly enjoy playing with intertextual chiptune compositions, particularly for the amusement of friends and fellow fans online. Soundtracks for more contemporary video games, television series and films are often within my creative sights for a chiptune re-telling. And at the time of writing, I am working on an 8-bit re-arrangement of The Buggles’ 1980 debut album ‘The Age of Plastic,’ to mention just some of my adventures in retro recording.

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<sup>55</sup> Even as I write, I fondly reminisce about exploring mountainous terrains composed of gigantic fruit segments in Core Design’s *Chuck Rock II*, scored by the acid jazz chipmusic of video game music composer and demoscener Martin Iveson (aka Nuke) (1992). I remember the gaudy colour gradients of *Zool 2*’s parallax skies, as Patrick Phelan and Neil Biggin’s heart-pumping soundtrack drove me on to seize the in-game collectables – pixelated depictions of Chupa Chups’ confectionary (Gremlin Graphics 1993). I will never forget the late Richard Joseph’s chiptunes, which leant a haunting edge to *The Chaos Engine*’s steampunk menagerie of biomechanical mutations and rabid automata (Bitmap Brothers 1993).

‘Autoethnography’ is defined by Hills as the process in which ‘the tastes, values, attachments, and investments of the fan and the academic-fan are placed under the microscope of cultural analysis,’ and often forms an integral part of aca-fandom (2002, p. 72; see also Hellekson and Busse 2006, pp. 24-5; Evans and Stasi 2014, p. 4). My own account of my chiptune fandom above, for instance, is a potential starting point for such an analysis. As Hills elaborates, autoethnography requires ‘the person undertaking it to question their self-account constantly’ (2002, p. 72). Autoethnography is thus a feminist methodology in that – in tow with aca-fandom – it involves recognising and writing from one’s own subject position, but critically (Hellekson and Busse 2006, pp. 24-5; Jenkins 2013, p. xi).

In this sense, it differs from autobiography. Rather than simply narrating the wholeness of the ‘I’ and remaining in this perspective, as autobiography does, autoethnography ‘writes up’ the self in a way that exposes the dynamic and complex matrix linking ‘the personal with the cultural’ (Ettorre 2017, pp. 1-4). Autoethnography deliberately traces, explores, and confronts the multiple levels of encounters and negotiations of agency, across boundaries and within paradoxes, through which the self emerges within a cultural context (*Ibid.*, p. 3; cf. Hills 2002, pp. 45, 74). Autoethnography, thus, can be considered a useful methodological tool for questions pertaining to relational ontology.

As briefly mentioned in section I.3, the collection of empirical data formed an integral part of my research process. This data consisted of chiptune fan testimonies and samples of discourse, detailing the ways in which they experience chiptune in relation to their identities. As Polymeropoulou argues, such insights are integral to understanding – as well as demonstrating – the motivations of chiptune practitioners and communities (2014; cf. Frith 1998, p. 249). The use of empirical data in such a way also has a long history in fan studies in general, primarily as a vehicle to incorporate fan voices, behaviours, concerns, and politics into scholarship to provide both fan representation, and illustrate the more theoretical side of the research (Jenkins 2013, p. 4; Duffett 2013, pp. 61, 77; Booth and Kelly 2013, p. 131; Deacon and Keightley 2014, p. 303; Bennett 2018, p. 36; Busse 2018, p. 9).

I used two main forms of data collection: an online survey and an Internet ethnography. The online survey was my primary form of data collection, and for reasons I will soon discuss. This survey adheres to Lucy Bennett’s three main points of consideration when conducting this form of fan ethnography: ethics, design, and distribution (2018, pp. 36-7; see Whiteman 2012). Named ‘Participation in Chiptune,’ the survey was hosted on *LimeSurvey.com*, which offered design flexibility, excellent reliability for privacy and data protection, email updates detailing participation, and numerous options for the analysis of data once collected (cf. Bennett 2018

pp. 38-9). Beginning with ethical considerations, I made sure to start the survey with a screen that introduced myself as a researcher and chiptune fan, clearly stated my research intentions, outlined the format of the survey and the optional nature of *all* questions, and which clearly promised anonymity, data protection measures, and the right to withdrawal (cf. *Ibid.*, p. 37). A similar screen was also used at the end of the survey – displayed upon quitting at any point – to thank the participant for their time and list the relevant contact details should they have any further enquiries or concerns (see both messages in appendix, p. 227-8).

This is an area where my aca-fan position also became useful. The intention behind these statements was not only informed consent; by informing the participant that I am a chiptune fan myself, I aimed to create a sense of trust (cf. Busse 2018, p. 11; Brooker, Duffett, and Hellekson 2018, p. 6). While the survey aimed to collect data for analysis in an academic context, by informing the participants that I too am a devoted chiptune fan I hoped to assure them that not only do I care about the subject matter, but that I am also aware of the sensitivity of representing their voices, and my responsibility and accountability in doing so (Jenkins 2013, p. xiii; Cavicchi 1998, p. 12; Hills 2002, p. 18; Brooker, Duffett, and Hellekson 2018, p. 64). In turn, such assurance and trust may encourage fans to disclose more about their interests and personal attachments, and I certainly feel this was the case with the rich data I collected and the enthusiasm with which many of my participants approached both myself and the survey (cf. Brooker, Duffett, and Hellekson 2018, pp. 63-4).

The survey opens with optional questions regarding demographic information – in particular: age range, gender identity, sexual orientation, whether they compose chiptune or not, whether they attend live chiptune or not, and choices of which chiptune aesthetics they enjoy (8-bit/16-bit/hardware-based chiptunes and/or fake-bit) (full list of questions can be found in the appendix, see p. 229).<sup>56</sup> As I will soon discuss, collecting data from a broad variety of chiptune fans had implications on my research findings (cf. Bennett 2018, p. 39; see further below).

Following the demographic section, the next set of questions were tailored to gather qualitative rather than quantitative information. The first two questions were ‘could you describe your introduction to chiptune? How did you get into it?’ and ‘could you describe what you find appealing about chiptune? What do you enjoy about it?’ These questions were accompanied by a large text box and were designed to be open-ended, prompting the

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<sup>56</sup> The age ranges available were: 19-25, 26-35, 36-45, 45+, and prefer not to say. The 0-18 category was omitted here to avoid ethical concerns regarding consent (cf. Bennett 2018, p. 39).

participant as to the subject matter – encouraging them to reflect upon and articulate their own chip-musical experiences – whilst also allowing them the freedom to ‘set the terms’ of their answer’s detail and length (cf. Bennett 2018, p. 40).

Following this were a series of multiple-choice questions enquiring about different aspects of chiptune and fan preference/taste. The first asks ‘could you tick what you find appealing about chiptune? Tick as many as you like,’ and presents the respondent with a series of tick boxes showing the following options:

- Technical aspects
- Creativity
- Vintage
- Retro
- Nostalgia
- Authenticity
- Community

After this list I added a tick box for ‘other,’ and text space for fans to enter their own qualities should they wish to do so (cf. *Ibid*). A further sub-question accompanied each of the options presented here, asking: ‘if you ticked [...], could you elaborate a little on why this aspect appeals to you? A few words are fine, or as much as you want.’

The qualities listed in the tick boxes were chosen based on common themes I have observed in chiptune fan discourse, some were more general topics – such as technology and creativity – and others were slightly more provocative. Such topics as nostalgia and ‘authenticity,’ for instance, tend to stir strong feelings for chiptune fans, and as such their inclusion here aimed to encourage further elaboration from the participant on the nuances of their experiences with chiptune. This room for elaboration also helped to eschew simple ‘yes’ or ‘no’ answers, and by allowing the participant to potentially challenge the descriptors I used in the tick boxes, I aimed to avoid potential issues of bias in relation to the survey’s design (cf. Ruddock 2001, p. 56; cf. Bennett 2018, p. 40).

The second multiple choice question – and the final question of the survey – similarly asked the participant to tick the kinds of chiptune they enjoy from a range spanning:

- Original chiptune videogame soundtracks (1980s and 1990s)



- Original chiptunes in the style of 1980s and 1990s videogame soundtracks
- Covers of popular/other music (for example, an 8-bit remix of Daft Punk)
- Covers of film/TV/Other media soundtracks (for example, a 16-bit FM remix of the *Game of Thrones* theme)
- Covers of contemporary or other videogame soundtracks (for example, an 8-bit remix of the theme for *Assassin's Creed 3*)
- Emulated chiptune (often referred to as 'fakebit')
- Hardware-made chiptune only
- Hardware/emulation blend
- Live performances of chiptune

As with the previous multiple-choice question, the 'other' option was implemented with space for the participant to add their own answers, as well as space for the participant to elaborate on the choices they made in the tick box sections.

The survey was circulated amongst a variety of online chiptune fan spaces. These spaces ranged from both publicly accessible and private chiptune fan forums (such as *chipmusic.org*, *forum.renoise.com*, and *micromusic.net*) to more general social media sites that host chiptune fan pages (such as *Reddit* and *Facebook*). In each case, I was a member of the chiptune group or fan page, and I made sure to contact their administrators and moderators to gain approval before sharing my survey (cf. Bennett 2018, pp. 40-1).<sup>57</sup> As I shared the survey among these online spaces, I accompanied the link with text introducing myself, my own chiptune fandom, my research intentions, and an outline of the survey format. I also shared the survey link with chiptune fans I knew in person, and after presenting papers on chiptune fan identity in Southampton (UK), Florida and Michigan (USA), and Leipzig (Germany), I was approached by fans interested in taking the survey. In total, 72 fellow chiptune fans gave up their time to fully complete the survey – many with great enthusiasm as they shared tales of fond memories, and the kicks they still get out of duty cycle glitches. I am very grateful.

The second form of data collection, Internet ethnography, involved the observation and documentation of fan interactions and discourse within online spaces (see Hine 2008, p. 256; Duffett 2013, p. 260; Evans and Stasi 2014, pp. 5, 15-7). In addition to surveying, this data collection method has also formed a key aspect of previous chiptune research, as well as fan

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<sup>57</sup> Some administrators and moderators were kind enough to pin the survey link at the top of forum threads and group pages.

studies in general (see Lysloff 2004, pp. 23-39; Polymeropoulou 2014; Busse 2018). Following in their footsteps, I occupied the role of participant observer within chiptune forums and other online spaces in which fan discourse took place. Like the survey, the kinds of discourse I aimed to capture centred around the subject of chiptune fan attachments and personal, *musical* experiences. The comments I documented were primarily sourced from text posts by fans online (in which they discuss why chiptune matters to them personally, as well as aspects they like and dislike), and from fan comments made regarding online uploads of chiptune (in which they discuss their listening experience of a specific piece of music). As with the survey distribution, these spaces ranged from dedicated chiptune websites to social media, but also extended to both *YouTube* and *BandCamp* comment sections – aiming to capture the voices of fans who do not participate in forums or social media.

Unlike the survey, however, I did not interact with or guide fan words by way of direct questioning (cf. Duffett 2013, p. 267). As such, this is unsolicited data: ‘material that [...] is not brought into existence by the research project’ (*Ibid.*, pp. 258-60). As Duffett points out, such data allows researchers to give evidence outside of the material they have solicited, thereby achieving greater critical distance, and avoiding potential issues of research bias (*Ibid.*, p. 259). However, this method of data collection also raises its own ethical concerns (*Ibid.*; Busse 2018, pp. 10-12). For instance, there are issues of whether the comments contain sensitive information, and whether they are sourced from public or private online spaces (Duffett 2013, p. 259). Even if sourcing fan comments from publicly accessible spaces – such as *chipmusic.org* or even *YouTube* – care still needs to be taken. While some fan comments online are publicly accessible, they may still feel that their interactions and discourse are private (Busse 2018, pp. 12-3; Brooker, Duffett, and Hellekson 2018, p. 66; Busse and Hellekson 2012, p. 39). As such, while I collected this form of empirical data solely from publicly accessible online spaces, I still exercised caution in terms of the topics discussed – particularly the sensitivity of the content.

Once I had begun to accrue my empirical data, my aca-fan subject position and use of autoethnography fully began to cross-fertilise in the development of my analytical framework. In addition to my critical reflections on my chiptune fan experiences, I began by treating my empirical data as examples of fannish autoethnographies. I observed that, whether in/directly or un/consciously, the survey responses and the online comments I documented articulate and unveil the self *in relation to* the encounters that shape its emergence and the fannish experiences thereof. In other words, by discussing their personal experiences with chiptune in varying levels of detail and context, chiptune fan words revealed to me the traces of a self in

musical play, a self in *process*, and thereby the traces of chiptune fan identity, its relational ontology, and the essential tensions at work within. As Bennett suggests with such data, I then began to examine for key aspects, themes, and patterns among these traces (2018, p. 42).

While on the subject of interpreting empirical data, I would like to also stress two further concerns that arose through my position of aca-fan: inclusivity and representation. As I stated in section I.2, chiptune is not only creatively diverse but also has a multifarious global following. Current research into chiptune, however, tends to privilege certain audience demographics in their ethnographies. Featured interviewees are predominantly cis-male, white, heterosexual, and typically belong to the older generations of chiptune fans who possess first-hand experience of the demoscene's heyday in the 1980s and 1990s. The focus on older fans, is justifiable in the case of historical approaches to chiptune, in which such testimonies help to flesh out the (sub)cultural genealogy the author wishes to trace (see McAlpine 2018). But as Polymeropoulou points out, citing such a narrow demographic tends to privilege the 'gatekeepers' in positions of power – typically those who, having the privilege of demoscene experience, perpetuate narratives of 'authenticity' around certain chiptune practices (such as fake-bit) – and thereby obfuscates the diversity of contemporary chiptune in both audience and creative breadth (2014).

Polymeropoulou, in fact, is the first – and at this point, only – researcher to highlight the white male dominance of chiptune communities and discourse, both in academic representation and fan presence online, and thus she strives to afford visibility to female as well as LGBTQIA+ fans in her research (*Ibid.*). I likewise aimed for such inclusivity in my ethnographic data collection. Incorporating such voices was not only representative of chiptune's diversity, but also methodologically important. By no means do I intend to make a sweeping generalisation here, but in my own experience within chiptune communities I have observed that female and LGBTQIA+ fans tend to be more open when discussing music and the affirmation of their identities – often as a means of belonging and working through adversity.<sup>58</sup> As such, these voices were methodologically significant in that they further revealed, at times in great autoethnographic depth, the traces of the musical processes in which their identities are enmeshed.

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<sup>58</sup> As a queer chiptune fan and musician, I have witnessed many fellow fans relate their own gender identity and sexual orientation to their chip-musical performativity. Some are close friends of mine, and often the topic of conversation between us has turned to the subject of chiptune and queerness, and the ways in which our notions of who we are emerge through the interaction between our bodies, obsolete and hacked machines – hardware or emulated – driving beats, gritty timbres, and ethereal synthesized voices. Typically, chiptune communities are very open and welcoming regarding the diversity of their members. Such heterogeneity, however, has yet to be acknowledged widespread in chiptune's academic representation.

I also wanted to incorporate another audience demographic that, to date, remains largely underrepresented in chiptune research. Not all chiptune fans are chip-musicians (composers and performers). As chip-musicians are predominantly the focus in previous chiptune research, fans who just listen are greatly neglected. I strived to incorporate these kinds of fan voices as they, too, articulate the ways in which chiptune has shaped their identities from perspectives that differ to those of performers and older demosceners. By doing so, I also aimed to avoid privileging fans with the most chiptune knowledge and experience (cf. Hills 2002, pp. 65-7). Participant 56 of my survey, for instance, is an established chip-musician and lifelong fan, who rather generously narrated their chiptune fandom from its earliest encounters up to the present. By comparison, the responses of participant 43 – a younger chiptune fan who mainly enjoys listening to chiptune and composing on the odd occasion – were much shorter and less intricate. Yet both were treated as equally important in my research: each revealed important autoethnographic traces of the relationship between chiptune and identity – one highlights unique aspects that are not present in the testimony of the other, and vice versa, and at times their testimonies shared important aspects that guided me to key analytical themes.

For reasons of inclusivity, the online survey became my primary means of data collection for its ease of accessibility, potential outreach, and as a means for me to sample an array of chiptune fan voices (cf. Bennett 2018, p. 36). In tow with sending the survey to a variety of online spaces – both private/specialist and more public/social-media based platforms – it allowed me to collect a variety of empirical data from a diverse range of chiptune fan voices. This is where my chiptune research differs from previous publications, in which interviews are typically the primary source of empirical data. While interviews have the benefit of providing more in-depth answers, most studies tend to use a smaller number of respondents as they key informants throughout their research and – as stated above – concentrate on a specific chiptune fan demographic.<sup>59</sup>

While my survey had a relatively broad outreach, its findings in no way present a complete image or ‘typical profile’ of chiptune fandom and it inevitably favours certain characteristics (cf. Rebaza 2009, p. 150). The survey predominantly retrieved data from those who frequent chiptune fan forums and social media pages; not all chiptune fans participate in these spaces. This is where my Internet ethnography aimed to compensate. But even then, not

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<sup>59</sup> This said, pre-existing interviews with chip-musicians do form a part of this study along with my empirical data. There are plenty out there online and in previous chiptune research, but even here I wanted to ensure diversity in their selection. The most diverse interviews with chip-musicians are found in both journalistic sources and self-written articles, and as such I primarily quote these sources when analysing pre-existing interviews in my research.

all chiptune fans are even active online, let alone visibly so. Another potential limitation of my empirical data is that it only captures the voices of English-speaking chiptune fans. The survey is only accessible to English speakers and the data I have collected through my Internet ethnography, likewise, is limited to this language by necessity of my own subject position as a monoglot. Consequently, while I strove for inclusivity in most demographic qualifiers, my data lacks the potentially rich inclusion of international chiptune fan voices (cf. Bennett 2018, p. 41).

Even with inclusivity in mind, I had to be careful with the subsequent representation of my data. As Jenkins states, aca-fans must recognise that what they write matters, and that the claims they make have potential consequences for the subjects they depict (2013, p. xiii). There were three main concerns that shaped my approach: first, accounting for fan heterogeneity and subjectivity; second, to which extent fans ‘speak with their own voices’ in the research; and third, my own personal bias and academic subjectivity (Bennett 2018, p. 42; Duffett 2013, p. 265; Busse 2018, pp. 14-5; Hills 2002, p. 5).

As I analysed my empirical data for common themes, patterns, and traces, I had to be careful not to homogenise my research subjects and, by extension, chiptune fan culture (cf. Bennett 2018, p. 42). Perhaps the most infamous example of this – one infamously renowned among many chiptune fans – is Malcolm McLaren’s interpretation of chiptune in his 2003 article for *Wired* magazine. Zooming in on a singular aspect – its recycling of obsolete industry technologies and the political aspects of doing so – McLaren romanticises chiptune as an entirely anti-capitalist movement, the ‘new (8-bit) punk,’ that resists by way of subverting and repurposing such commercial technologies and symbols as the Game Boy (2003; see Hebdige 1979). While it is true that some fans do enjoy chiptune for this reason, many did not respond favourably to this blanket attribution of an anti-capitalist agenda – an open letter expressing the backlash of the community was swiftly drafted (gwEm in Yabsley 2007, p. 11; see Márquez 2014, pp. 74-5).<sup>60</sup>

With this in mind, by using a large pool of diverse ethnographic data I intended to critically trace, test, and model my approach to chiptune and fan identity in a way that can be applied to all chiptune fans, but also in a way that accounts for the heterogeneity and

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<sup>60</sup> Here, McLaren’s work falls into many of the critiques levelled at the early works of the Centre for Contemporary Cultural Studies (CCCS): it omits the subjective experiences and voices of chiptune participants; it focuses on a singular chip-musical practice and portrays it as representative of the entire culture; and as an outsider unfamiliar with chiptune’s breadth, McLaren interprets the practices he observes in a way that not only misrepresents, but also homogenises chiptune culture – creating a dualistic binary between chiptune and ‘mainstream’ culture as a result of his own political leanings (cf. Hodgkinson 2002, pp. 30-1, 61; cf. Gelder 2005, pp. 81-4; cf. Hills 2002, pp. 2-4, 11-5).

subjectivity of the fan in question (cf. Polymeropoulou 2014; cf. Bennett 2018, p. 42). I also took into consideration the nuances and contradictions presented by my data (cf. Bennett 2018, pp. 41-2). Inevitably, there were many such clashes in terms of taste and ideologies when comparing chiptune fan surveys and exchanges of discourse. This turned out to be analytically useful, however, as such nuances and clashes further reveal the multiple, dynamic, and even paradoxical nature of fandom (cf. Hills 2014, pp. 18-9).<sup>61</sup>

Occupying an aca-fan position, however, does not guarantee complete ethical and theoretical unimpeachability (cf. Brooker, Duffett, and Hellekson 2018, p. 73). I was aware of what Hills terms ‘imagined subjectivity,’ which describes how aca-fans can still create problematic value judgements on the subjects they study – overarching narratives and canon, or dualisms between ‘good’ insiders and ‘bad’ outsiders, for instance – and do so in the belief that they occupy a position of un-biased objectivity and rationality (Hills 2002, pp. 3-8, 11, 21, 81). I was aware of my own biases and privileges as a chiptune fan and scholar, and the ways in which they might sway my critical insight, or un/consciously inform the sampling of my research data to emphasise certain aspects of chiptune fandom and omit those that are less favourable (Busse 2018, pp. 14-5; Duffett 2013, p. 268).

This concern also extends to using fan voices to simply validate my own existing ideas and knowledge on chiptune fandom, as well as ignoring fan voices that do not align with the research aims of the project or distorting them so that they do (cf. Bennett 2018, p. 42; Busse 2018, p. 14; Brooker, Duffett, and Hellekson 2018, p. 73; Hills 2002, pp. 5, 81). This said, it is not possible to write completely objectively, entirely without fannish biases and traces of the self in the work, nor is it possible to resign one’s academic subject position, training, and privilege (Brooker, Duffett, and Hellekson 2018, pp. 69-70). For aca-fans, the identities of fan and scholar cannot be fully separated (Hellekson and Busse 2006, pp. 24-5).

By combining aca-fandom with autoethnography in the analysis of my empirical data, I intended to follow the methodology of Hellekson and Busse: by existing at the intersection of fandom and academia – avoiding the ‘aca-colonisation’ of fandom as well as the loss of their own scholarly allegiance – I utilise both my ‘academic *and* fannish tools’ to enhance my analytical framework (*Ibid.*, p. 25, emphasis added). By occupying the fluid position of both chiptune fan and academic researcher, I aimed to develop ‘lines of thought and [incorporate]

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<sup>61</sup> My role here as researcher was neither to support nor challenge these differences in opinion (cf. Brooker, Duffett, and Hellekson 2018, p. 68). To reiterate, my research interest is the musical interaction *between* fans and chiptune, and how this interaction shapes fan identity. As such, I aimed to trace the relational ontology of chiptune fan identity in a way that could account for the nuances of fandom, the presence of paradoxes, and the necessity of tensions.

fields of analysis that may not be [immediately] evident to a casual outsider' (Brooker, Duffett, and Hellekson 2018, p. 68). In this way, the analytical framework I developed to answer my research questions – which I will now outline – was greatly influenced by the autoethnography that took place *between* my own chiptune fan identity, and the traces I observed in my empirical data (cf. Hellekson and Busse 2006, p. 25; cf. Brooker, Duffett, and Hellekson 2018, pp. 63-4, 67).

### ***1.5.2 Analytical framework and chapter overview***

As I stated in section I.3, my hypothesis was that to answer my research questions I required an analytical framework that allowed me to achieve the following goals: trace the relational ontology of chiptune fan identity as it is shaped between non/human encounters in musical performance, identify what each non/human component does in the process and how they musically interact with one another, and model chiptune fan identity *itself* in a way that navigates the essential tensions of this process. Given the nature of this task, the theory that underpins this framework would be necessarily interdisciplinary in order to analyse aspects that cannot be adequately grasped through the lenses of previous chiptune research, ludomusicology, and music fan studies alone. And in addition to my aca-fandom and the theoretical leads gained from prior research, the chiptune fan voices in my empirical data were extremely useful in directing me to the kinds of theory I needed to apply.<sup>62</sup> Consequently, there are also essential tensions present in the epistemology of this thesis; to better comprehend the complexity of my research aims, I had to blur disciplinary boundaries and engage in theoretical 'cross-talk' (cf. Hills 2007, p. 46; cf. Duffett 2014, pp. 1-7).

After identifying relevant theoretical lenses, the analytical framework I developed for this study consisted of a tripartite model, whose trajectory was based on my engagement with the autoethnographic traces in both my own critical reflections as a chiptune fan, and my empirical data. I employed different theoretical lenses relevant to accomplishing the task at hand within each of the three parts, which unfold across 6 chapters in this thesis.

### ***Part I: Approaching chiptune fan identity in musical Play***

The first part of this model identifies the ways in which fans experience chiptune in relation to their identities, as it through these experiences that the shaping of identity takes place and, hence, where the analytical clues of the process lie (cf. Hassan 2014, p. 67). After this is

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<sup>62</sup> For this reason, these voices also appear throughout this study as illustrative case studies.

established, this part of the model then zooms in on the process of identification and breaks down chip-musical experiences into their component non/human relations.

The research aim of this part is undertaken in Chapter 1. To do so, Christopher Small's concept of musicking is used to ground this study's contention that the analysis of chiptune needs to centre on music as an *activity* (1998, pp. 1-3). In order to then translate Small's concept into the context of fan identity, I put it in dialogue with Cornell Sandvoss's notion that objects of fandom can engender experience of 'home' for fans (2005, p. 64). Combining the two lenses, the concept of 'homecoming' is developed. 'Homecoming' allowed me to theoretically capture the experiences of chiptune fan identity in musical play, and importantly in a way that could account for their heterogeneity.

Chapter 1 then breaks down fannish experiences of chiptune into their component non/human relations. Such a task is analytically challenging, not in the least because it attempts to grasp processes that are less visible and tangible in comparison to other forms of media fandom (cf. Duffett 2014, pp. 1-7). Here, I use a musicologically enhanced version of Bruno Latour's actor-network theory (ANT), which is a theoretical tool for analysing the ways in which all social realities are mediated by the agencies of both human and non-human actors (2005; Blake and Van Elferen 2015). Through this lens, I build on Carlsson's insights on chiptune as a 'techno-social' relationship and argue that chip-musicking can be approached in terms of a network consisting of musical and non-musical, human and non-human actors (Blake and Van Elferen 2015, pp. 66-8). Chiptune's 'homecomings' are then analysed as forms of social-musical realities that are mediated by these actors and their convergent interactions, which engender the essential tension of 'immanence and composition:' the unavoidable stirring of fannish connotations that, by the very nature of musical performativity, are unstable, unpredictable, and shift with every subsequent musical action (*Ibid.*, pp. 68). Identifying these non/human actors, however, once again raises issues of heterogeneity

As Kassabian states, there are an infinite number of possible non/human influences in musical performances that can factor into what we consider to be our identities (cf. Kassabian 2013, pp. xxviii-xxix). Chiptune's heterogeneous musical practices present an equally expansive range of possibilities. Here, my empirical data helped me narrow down my focus. All chiptune fans have favourite artists, sub/genres, and chip-musical practices. Yet chiptune is a unique music fandom in that the main qualitative staples it emphasises – that which defines musical practices and experiences *as* chiptune – are chip-musical technologies, chiptune fans, and chipsound timbre. These three non/human and non/musical actors are argued to be the



primary mediators of chiptune's 'homecomings' and, thus, are the key components that shape chiptune fan identity in musical performance.

### ***Part II: Chiptune's primary mediators***

The second part of the model then explores each of these non/human components individually, identifying the agency of each before then analysing how it mediates the 'homecoming' qualities that emerge from chiptune actor-networks. This research aim is undertaken in chapters 2, 3, and 4. Chapter 2 begins by exploring the primary non-human mediator of chip-musical technologies, which are argued to form the medial grounds of chiptune. The technical constraints of PSGs – both pragmatic and sonic – are present throughout all forms of chip-musical practice; I therefore argue that it is the agency of chip-musical technologies to mediate these constraints and, thus, catalyse the formation of chiptune actor-networks.

In present day chiptune there are, however, innumerable kinds of chip-musical technologies which can mediate these constraints: hardware, emulated, VSTs, smartphones, online platforms, and music streaming services. The essential tension here lies between a specific kind of technological mediation – the constraints of the PSG – and the new and expansive ways in which this form of mediation can be achieved through a diverse and continually expanding range of musical technologies. To account for this, I argue first that PSG constraints form chiptune's equivalent of what Paul Hodkinson terms 'consistent distinctiveness:' necessarily present throughout its musical practices in some form, but also unique to every chip-musical instance and in continual development (2002, p. 30). Second, I musicologically adapt Jay Bolter and Richard Grusin's concept of 'remediation:' the process through which media technologies channel the old within the new through different strategies. Through this lens, I then argue that chip-musical technologies afford similar strategies for fans to remediate PSG constraints, thereby identifying their mediatory agency in a way that, once again, accounts for heterogeneity.

Chapter 3 then identifies the agency of fans as the primary human mediators of chiptune's 'homecomings.' Here, I draw attention to chiptune fan knowledge and argue that it feeds into their ability to inter/act within, and thereby mediate, chiptune actor-networks. First, I argue that knowledge on chiptune fandom – in which the technical and the personal intertwine – forms as a kind of 'cultural capital' (Bourdieu 1984, pp. 80-4, 114). Unlike previous uses of Pierre Bourdieu's work in a fannish context, however, the lens is not used to observe how cultural capital creates fan groupings and hierarchical shifts (see Hills 2002, pp. 50-8). Instead, and with ANT in mind, I zoom in on the ways in which the values and personal importance of

this knowledge – which I glean through chiptune fan words – transform into fan behaviour: from knowledge-to-*action* and, thereby, agency. It is this knowledge, in other words, which guides the kinds of mediatory actions chiptune fans perform to shape their ‘homecomings.’

This agency is then contextualised as a form of media literacy through W. James Potter’s outline of the concept (2013; 2004). Potter’s work is useful here for three key reasons. First, Potter’s outline of media literacy traces how specific kinds of knowledge inform media competencies, and in a way that takes personal aspects into account. Second, it considers both the un/conscious and un/predictable aspects of media interaction. Third, it understands that media literacy is a continuum – the knowledge that informs its competencies, and the ways in which this knowledge becomes active, is subject to flux. Adapting this outline, I map the main kinds of knowledge that constitute chiptune capital, establish the un/conscious and un/predictable nature of the ways in which this knowledge informs chiptune fan agency, and then I identify the main kinds of musical actions guided by chiptune capital, through which fans mediate their chiptune ‘homecomings.’ The essential tension here being that while chiptune capital helps to inform the stability and continuity of chiptune fan identity, it is also subject to change and becomes active in unpredictable ways.

Chapter 4 focuses on chiptune’s third primary non-human mediator: chipsound timbre. The majority of my empirical data highlighted the fact that it is chipsound timbre which triggers the fannish connotations of chiptune’s ‘homecomings.’ To contextualise this as a form of mediatory agency, the lens of hauntology is used to argue that chipsound timbre has a profound effect on fans’ perceptions of memory and time, and it is through this effect that it mediates the ‘homecomings’ of chiptune fandom. As a case study to illustrate the hauntological agency of chipsound timbre, this chapter further explores the relationship between chiptune and nostalgia. Through this case study, I once again build on the insights of Carlsson’s chiptune research.

By combining hauntology with contemporary nostalgia theory, I explore the ways in which nostalgia can in fact be a transformative source of creativity for any chiptune demographic, regardless of ‘lived experience’ (cf. Guesdon and Le Guern 2014, pp. 70-9; cf. La Barba 2014, pp. 179-90; cf. Goetz 2018, pp. 58-80). The approach this study takes to nostalgia, therefore, is not as ‘a symptom that explains something’ but rather as a ‘force that does something’ and, moreover, one that is deliberately conjured by some chiptune fans as an integral aspect of their identities (cf. Niemeyer 2014, p. 10; see also Schrey 2014, pp. 27-36). The essential tension of this process being that, while chipsound timbres trigger fannish

connotations by way of memory (as a form of ‘rootedness’), due to the hauntological nature of their resurgence they are also subject to distortion and rewriting (as a form of ‘up-rootedness’).

### ***Part III: The ludomusical shaping of chiptune fan identity***

The third and final part of the model then analyses how chiptune’s non/human mediators interact with one another in musical play to shape chiptune’s ‘homecomings,’ and then explores how we can conceive of chiptune fan identity in relation to these musical processes. Chapter 5 begins by focussing on the musical interactions between chiptune’s non/human mediators and does so by combining the lenses of affect theory and ludomusicology (cf. Gregg and Seigworth 2010, pp. 1-6; cf. Van Elferen 2016, pp. 35-6).

Where affect can be used as a synonym for emotion in fan studies, the use of ‘affect’ in this study is as defined by the affective turn in the humanities (Kohnen 2018, p. 339; cf. Hills 2002, pp. 60-3; cf. Clough 2007, pp. 1-3). Affect theory is a useful theoretical tool for analysing interactions between non/human bodies and materials; here I use it to enhance ANT’s approach to non/human relations – allowing me to grasp them further in depth, and account for the potential changes that occur to the non/humans involved (cf. Sage, Vitry, and Dainty 2019; see Bennett 2010, pp. 1-10, 20-3). At this point, I begin to create the link between the shaping of chiptune’s ‘homecomings,’ and how we can conceive of fan identity in relation to these musical processes.

After establishing the use of affect theory, I then adapt it for musicological analysis through Roger Moseley’s concept of ludomusicality, which studies how music becomes playful and play becomes musical between non/humans (2016, pp. 1-7). Through this combined lens, I use a case study of chiptune in live performance and trace the ways in which its primary mediators musically play together. Rather than just acting as mediators – as non/humans performing specific tasks – their mediatory agencies are framed as forms of ludomusical potential: a potential to play music and to be musically playful. By doing so, I account for the unpredictable and unstable aspects of musical play. The combined lenses in this chapter then trace what I term the ‘ludomusical encounters’ and ‘ludomusical events’ which take place within chiptune actor-networks.

Ludomusical encounters refer to the ways in which chiptune’s primary mediators musically interact with and mediate one another; these interactions are affective in that they co-produce ‘ludomusical events,’ which describe any form of audible outcome of playing and playing with chiptune. Zooming in on musicking fans in performance specifically, I follow the ways in which they ‘become with’ the ludomusical encounters and events taking place around

them, adding their own agencies into the mix. Chiptune's 'homecomings,' I argue, emerge as the intensities of ludomusical encounters and their emergent events are 'captured' in the bodies of musicking fans. Here I return to the essential tension of immanence and composition – elaborating on the simultaneous 'self-presence' and transformative 'self-absence' of chiptune's 'homecomings,' as chiptune actor-networks shift continuously in musical play (cf. Frith 2002, p. 109; cf. Hills 2002, p. 171). I then argue that this affective capture can leave I term 'ludomusical traces' in the bodies of fans, which describe the ways that the residues of 'homecoming' experiences accrue as memories, and potentially change the makeup of chiptune capital. Chapter 5 then ends by raising the question of how we can model chiptune fan identity in relation to the affective in/stability of the 'homecoming' process and its ludomusical emergence, and the traces it can leave behind.

Chapter 6 takes on this task and brings the insights of the previous chapters together into a new theoretical model for chiptune fan identity, its ludomusical shaping, and its longevity. This is achieved through a ludomusical adaptation of Rosi Braidotti's concept of the 'nomadic subject' (2011a; 2011b). Braidotti is a feminist philosopher and theoretician in the humanities. Her use of the term 'nomadic' is not a metaphor, nor a romantic image for those who have the luxury of jet-setting across the globe, nor does it refer to nomadic peoples or tribes (2011a, pp. 10-11). Braidotti's theoretical background is greatly influenced by the works of philosopher Giles Deleuze – both his own body of work and his collaborations with Félix Guattari (*Ibid*, pp. 12, 14, 17).<sup>63</sup> Her concept of the nomadic subject explores the ways in which our identities are developed through – and even rely upon – shifting affective, non/human relations and technological mediation (2011a, pp. 1-18, 64, 158).

By incorporating affect theory, as well as room for paradoxes and tensions, this framework builds upon feminist epistemologies; namely the unstable and gestural performativity of identity theorised by Judith Butler, and the non/human relational ontology of the self as theorised by Donna Haraway (Butler 1990; Haraway 2008). While her work on does not venture into the research fields of (ludo)musicology or media fan studies, her conception of the nomadic subject is an extremely useful lens with which to approach chiptune fan identity and answer the main research questions guiding this thesis.

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<sup>63</sup> Namely their work on the concept of 'nomadology' (see Deleuze and Guattari 2014, pp. 409-92). Deleuze's philosophy also forms the lynchpin of such concepts as affect, desire, non/human assemblages, immanence, ongoing transformation and, among other themes, critiques the notion of identity as a unified and isolated, unchanging, linear, or stable 'being' (see Deleuze and Guattari 2013a, pp. ix-xi; Deleuze 2013b, pp. xv, 86; cf. Braidotti 2011a, p. 58).

Here, I utilise two main concepts from her work. The first is nomadic becoming as simultaneous ‘rootedness and transition,’ which describes the essential tension between becoming and being in Braidotti’s work (Braidotti 2011a, p. 64). Braidotti recognises the importance of possessing a sense of identity and belonging, but also accounts for the fact that this sensibility is constantly shifting in relation to the non/human encounters present in our current circumstances. I adapt this concept to account for the essential tension of chiptune fan identity and the in/stability of its embodiment: its ludomusical shaping not only involves the hauntological resurgence of memory and bodily rejuvenation, but also creates room for unpredictable change. The second concept is ‘nomadic desire,’ which describes how the self-knowledge of the subject can un/consciously drive them towards future non/human relations that affirm their identities (Braidotti 2011b, p. 34). Here, I build on Chapter 3’s concept of chiptune capital and argue that not only does it feed into the ludomusical shaping of ‘homecoming,’ as chiptune literacy, but that it also becomes active and drives fans *towards* certain kinds of chip-musical practices. Through this understanding of desire, I then look to the longevity of chiptune fan identity and its ludomusical shaping.

By using Braidotti’s nomadic subject to tie the insights and tensions of the previous chapters together, I conclude that the shaping of chiptune fan identity occurs nomadically through a process of ludomusical trans/formation. Ludomusical trans/formation not only articulates the process through which chiptune fan identity is relationally shaped in musical performance, but also captures the essential tensions and simultaneity of becoming and being – or, rather, being *through* becoming – in this context. After this conclusion, this study will end with an overview of its chapters, reflections on its insights and how they may or may not apply to other forms of fan identity and, finally, discuss perspectives for future research.

# Part I:

## Approaching Chiptune Fan Identity in Musical Play

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### Chapter I

#### Chiptune Fan Identity: At ‘Home’ in the Music

I love chip music, and that’s never going to change. It’s so much fun to push through writer’s block and make new songs, year in and year out, trying new things and getting that one stupid note \*just\* right to satisfy my neuroticism. I’ve put out a new release every year since 2009 [...]. [I’m] glad I’m still [able] to pour my emotions into the music [...]. [Grateful] for you guys. Never stop creating. Chiptune forever. ( Redacted )<sup>64</sup>

With such an expansive field of chiptune fan activity and musical practice in mind, the intention of this section is not to construct a rigid definition of a supposed essence of chiptune fandom, what chiptune *is*, or ‘why’ chiptune fans specifically enjoy chiptune – for example, the sweeping generalisation that chiptune is entirely fuelled by nostalgia for childhood and video games. Instead, this chapter establishes what chiptune *does* to keep its fans hooked on its metallic FM basses, the driving power of its white noise rhythms, the ageing LCD screens of its transmission technologies, and the playful new horizons afforded by their circuit bent interfaces. To this end, this opening chapter begins by shedding light on how fans experience chiptune in relation to their identities and, second, identifying a means through which we can breakdown and analyse the process.

Section 1.1 addresses the former topic by combining the lenses of musicology and fan studies, developing the vocabulary through which we can refer to the fannish experience of chiptune in a way that accounts for its diversity. Subsection 1.1.2 will then illustrate this approach via chiptune fan case studies. Section 1.2 then looks to how we can approach and break down chiptune fan experiences for analysis. To do so, it expands upon the notion of

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chiptune as techno-social interaction by applying Bruno Latour's concept of 'actor-network theory,' which will help map the social and networked nature of the relations that takes place between fans and chiptune (2005, p. 46). Through this lens, chiptune will then be broken down into its key non/human components.

### **1.1 Chiptune: The Bleeps and Blips of 'Home'**

As identified in the introduction of this study, sociological approaches to chiptune document the kinds of discourses that circulate among on-and offline chiptune communities, which detail the motivations behind chiptune participation (Kummen 2018, pp. 39-55; Polymeropoulou 2014; Carlsson 2010, pp. 42-51; Yabsley 2007, pp. 21-8). The work of Carlsson, as I discussed before, outlines the categories of anti-nostalgia, control, hacker aesthetics, and digital economics (Carlsson 2010, pp. 42-51). I have found these categories to be valid in my own empirical research, but through both the observations I have made on my own survey data and the research interests of this study I would, first, consider these discourses as forms of fannish attachment to chiptune and, second, I would expand further on Carlsson's categories to now include:

- The fact that chiptune resonates with a fan's a sense of self, autobiographical events in their lives, and becomes a conduit for communal ties. (See for example survey participants 7, 11, 36, 56, 67, and 72 in appendix, p. 229)
- The nostalgia that emerges when chiptune conjures fond memories of such things as video gaming childhoods, or, intriguingly, creates a sense of nostalgia for the 1980s and 1990s even though some fans were born post 2000. (See for example survey participants 1, 4, 16, 19, 55, and 56 in appendix, p. 229)
- The creativity inspired by constraint and obsolete technologies, the satisfaction of achieving 'more with less,' creating something new with and hacking obsolete technology, and the lovingly cheap and DIY ethos of the demoscene that still permeates chiptune fan practices. This category also includes the 'anti-nostalgia' that Carlsson describes, in which chiptune fans feel they transform their video gaming memories into new creative potential. (See for example survey participants 14, 20, 25, 39, 67, and 69 in appendix, p. 229)

- ‘Authenticity’ in this study refers to the ways in which chiptune’s constraints create a sense of achievement or admirable craftsmanship. This category also includes fannish claims that chiptune’s sound is ‘raw,’ ‘unique,’ and ‘pure’ in comparison with contemporary music production values. (See for example survey participants 14, 15, 25, 30, 33, 40, and 69 in appendix, p. 229)
- The playfulness of chiptune cover versions, which for some fans are an enjoyable novelty and for others combine multiple fannish aspects into a single musical piece. (See for example survey participants 34, 36, 40, and 55 in appendix, p. 229)

While I list these categories separately for analytical purposes, they are by no means mutually exclusive. In many of my survey responses, fans cite all the above as reasons for their enjoyment of chiptune. All these attributed qualities, moreover, can be considered as important reasons as to why chiptune continues to play such an important role in the identities of fans.

Yet the question remains: *how* does chiptune produce these kinds of fannish attachments? How can we identify this process in a way that accounts for the heterogeneity of fannish experiences?

One thing that connects the broad spectrum of fannish attachments and musical practices of contemporary chiptune culture, in all its guises and practices, is that chiptune thrives in performance, in listening, in *action*; chiptune is something that fans *do* (cf. Introduction, pp. 25-6). From those who listen on the odd occasion to those who tour the world with their Game Boys and Commodore 64s in tow, it is in the ‘tune’ of ‘chiptune’ where the magic happens – where fandom comes to life.

### ***1.1.1 Musicking and ‘home’***

There are two concepts – one from the field of musicology, the other from the field of fan studies – whose integration forms a useful baseline for understanding the relationship between chiptune and fan identity. The first is Christopher Small’s concept of ‘musicking’ (1998). Small’s work, ground-breaking in the field of musicology at the time of its publication, greatly influenced the issues I addressed in the introduction of this study regarding approaches to music fandom (see pp. 25-6; see also Getman and Hayashi 2016, pp. 135-140). Small’s main argument is that music and musical meaning cannot be reduced to objects, such as a score, or to the history of a given piece, the supposed ‘original’ meaning prescribed by the artist or



composer, and nor is musical meaning something ‘inherent’ to the music itself (1998, pp. 9-10, 40-7).

Rather, Small writes: ‘[our] response [to music] is never to an object but always to that pattern of gestures [and encounters] we call a performance’ (*Ibid.*, p. 219). ‘[Musical meanings have] to be grasped in time as it flies and cannot be fixed on [paper]’ (*Ibid.*, p. 3). The lynchpin of Small’s argument is that we should approach music as a *verb* and not a noun, as a *process* and not a ‘thing,’ because ‘[the] fundamental nature and meaning of music [lies] in action, in what people do’ (1998, p. 8; cf. Introduction, pp. 25-7). ‘The apparent thing [or meaning] of “music” is a figment, an abstraction of the action, whose reality vanishes as soon as we examine it all closely’ (Small 1998, p. 2). On the premise of this argument, Small goes on to introduce his concept of musicking.

‘Musicking’ is an umbrella term that Small uses to encompass *any* and *all* actions that take place either involving, or in relation to, musical performance (*Ibid.*, p. 9). Musicking, for instance, describes how we participate in musical performativity in *any* capacity, which not only includes the actions of musical artists in performance, but also listening, dancing, rehearsing, and improvising (*Ibid.*). Musicking takes place both actively and passively, un/consciously, and whether it evokes responses good, bad, or indifferent, all are the result of an *active* participation. He writes:

[I] have to make two things clear. The first is that to pay attention in any way to a musical performance, including a recorded performance, even to Muzak in an elevator, is to music. The second is related but needs to be stated separately: the verb *to music* is not concerned with valuation. It is *descriptive*, not *prescriptive*. It covers all participation in a musical performance, whether it takes place actively or passively, whether we like the way it happens or whether we do not, whether we consider it interesting or boring, constructive or destructive, sympathetic or antipathetic. [Musicking makes] no distinction between what the performers are doing and what the rest of those present are doing, [musicking is] an activity in which all those present are involved and [everyone] bears some responsibility. It is not just a matter of composers, or even performers, actively doing something to, or for, passive listeners. Whatever it is we are doing, we are all doing it [together]. (*Ibid.*, pp. 9, 10, emphasis in original)

Small recognises, of course, that all participants in musical performances contribute in different ways with and varying degrees of influence; they are *all* nonetheless *active*, and thereby shape musical performativity in some way (*Ibid.*, p. 10). Small goes further to suggest that the actions of those who set up or clean the performance space influence the ways in which musical performances take place and are experienced (*Ibid.*, pp. 9-10).

Small contends that we participate in musicking to achieve ‘affirmations.’ ‘Affirmations’ refer to the use of music’s ‘power’ to assert, explore, and celebrate senses of individual and communal identity (*Ibid.*, pp. 37, 50, 90, 95-6, 183, 209; cf. DeNora 2000, pp. 151-63). On this point, Small writes:

[The] act of musicking establishes a set of relationships, and it is in those relationships that the meaning of the act lies. They are to be found not only between those organised sounds which are conventionally thought of as being the stuff of musical meaning but also between the people who are taking part, in whatever capacity, in the performance. [Whoever] engages in a musical performance, of whatever kind, is saying to themselves and to anyone who maybe taking notice, *this is who we are*, and that this is a serious affirmation indeed. [Through] musicking we learn about those relationships, we affirm them to ourselves and anyone else who may be paying attention, and we celebrate [them]. [Musicking] is in fact a way of knowing our [world]. [If] music is to explore, affirm and celebrate one’s link with the great pattern which connects the whole living world, then all musicking is serious musicking. (Small 1998, pp. 13, 212-4, emphasis in original)

The affirmative aspects of musicking in many ways resonate with Simon Frith’s contention that music is a way of ‘living ideas,’ be they imagined ideals of ‘who’ we are or our cultural belongings (2002, pp. 111, 123; cf. Cook 1998, p. 5; cf. Introduction, pp. 20-4). Affirmation can extend to *any* way in which we experience and attribute meaning to music, our ‘abstraction of the action,’ which might include experiences of nostalgia, enlivening social occasions, or dissolving the boredom of long car journeys (Small 1998, p. 2).

As the affordances of musical affirmation are temporary, Small contends that acts of musicking are performed ritualistically (*Ibid.*, p. 137). For Small, ritual relates to affirmation in that musical performances are often used in ritualistic scenarios to enhance the conviction, or feeling, of that which they set out to affirm – the religious use of music being an apt example

(*Ibid.*, pp. 94-105). Musicking is ritualistic but not in the sense of a strict, formulaic set of actions we enact at specific times of the day, religious uses of music notwithstanding. Rather, with fannish behaviours in mind, musicking is ritualistic in that it is something in which we regularly participate and, moreover, something we actively seek out and are drawn towards in order to bring relationships into existence and empower their attributed convictions (Huizinga 2014, pp. 5-17, 158-9; cf. Small 1998, pp. 105, 119, 148).

To adapt Small's concept of musicking into a fan studies context, Cornel Sandvoss's notion that the experience of fandom can be understood, metaphorically, as one of 'home,' shares many incidental and fruitful parallels with Small's work (Sandvoss 2005 pp. 44, 53, 63-4; cf. Hills 2002, pp. 144-45). Reflecting Small's use of the term 'affirmation,' the use of the term 'home' within fan studies describes experiences that do not refer to the intrinsic qualities of an actual, pre-existing, location. The 'home' of fandom – or '*Heimat*,' as Sandvoss calls it – refers to the ways in which fans subjectively experience their interactions with their objects, their texts, and communities (Sandvoss 2005, pp. 63-4).<sup>65</sup> Such experiences might include senses of emotional warmth, stability and security, '[a] distinct sense of self and identity' and '[a] sense of place and home, and, consequently, identities and communities in fan consumption' (Sandvoss 2005, pp. 30, 53, 64, 81, 163; Sandvoss 2014, pp. 134-6; see also Duffett 2013, p. 343; Williams 2015, pp. 24-7).

The 'homes' of fandom are socially constructed and manifest through an interaction between the 'physical, emotional *and* ideological' factors at play between the fan, the objects or texts with which they interact, and the textual and/or physical spaces in which they do so (Sandvoss 2005, p. 64; cf. Duffett 2013, p. 225; cf. Hills 2002, pp. 90-5). Through the social interplay between the physical, emotional, and ideological factors that Sandvoss describes, fans experience an

[imagined] relationship between the self and the external world, in which part of the world is experienced as inherently related to and constituted through the self; it is one's place in the world, in which place and community become an extension of one's self. (2005, p. 65)

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<sup>65</sup> *Heimat* is a German phrase that literally translates as 'homeland' but, for the sake of clarity, this study uses the metaphorical term 'home' – from here and throughout in quotation marks – to describe the fannish experiences that Sandvoss explores in his work.

The experience of fandom as ‘home’ is then ‘intrinsically interwoven with our sense of self, with who we are, would like to be, and think we are’ (*Ibid.*, p. 96; cf. Introduction, pp. 20-4).

As a result, the social relations that produce the ‘home’ experiences of fandom become sources ‘of personal power that people turn to at different points in their life journey’ (Duffett 2013, p. 138). Collectable objects, multimedia texts, the hallowed grounds of sports stadia or any other form of fan-appropriated elements from popular culture become the touch stones through which fans can continuously ‘anchor’ and ‘shape’ a stable sense of identity, connect with other fans and evoke a sense of belonging, play, and overcome hardships (Sandvoss 2005, pp. 30, 64, 81; DeNora 2000, pp. 126-9; Duffett 2013, p. 138). Potentially forming an ongoing, even lifelong part of a fan’s identity, a large role of their fannish ‘home’ is to guide, negotiate, and give meaning to their senses of self and belonging (cf. Williams 2015, pp. 23-4).

Given that they are socially constructed, however, the ‘home’ experiences of fandom are temporary. The ‘homes’ of fandom, Sandvoss stresses, are never fully, stably or concretely manifest; the ‘home’ of fandom is a subjectively defined experience and, just as Small uses the term ‘ritual,’ the social relations that form these experiences have to be re-enacted and maintained, which fans actively seek to do so (2005, pp. 64-5, 73). In addition, the ways in which fannish ‘homes’ manifest depend on the nature of the fandom in question – such as the media involved – and the interests and ideologies of its participants. For instance, the way that our smartphones allow us to conveniently listen to music of our choosing, wherever and whenever we are, enable us to experience the ‘homes’ of fandom with portable convenience (cf. Bull 2007, pp. 4, 66-87; Sandvoss 2005, p. 64).

Integrating both concepts from Sandvoss and Small can provide a useful baseline from which we can begin to explore the interaction between chiptune and fan identities. Now they have been outlined, we can establish an exchange between the work of Small and Sandvoss: Small’s musicking helps to emphasise that approaches to music fandom should focus on music in action, and not on the relationship between a subject and an object (cf. Introduction, pp. 25-7); Sandvoss’s concept of fandom as ‘home’ helps us to think about how we can contextualise the ways in which fans participate in musicking practices – specifically, the ways in which musicking is enacted with fannish affirmations in mind. My integration of musicking and fandom as ‘home’ thus has a twofold aim. First, to argue that fans musically experience chiptune as a form of ‘home’ in the sense that Sandvoss describes. Second, to grasp the ways in which chiptune in action – or ‘chip-musicking,’ as it might be referred to from Small’s viewpoint – constitutes the ‘home’ experiences of chiptune fans.

### 1.1.2 The 'homecoming' of chiptune fandom

I am motivated to work with sound chips mainly by the fact that I always wanted to create music with this particular sound since childhood. Being able to do something I always wanted to do from a young age never gets old to me. [I] constantly make references to things from my younger years in my music... from the song names... to moods... to getting a vibe of a specific game that I [liked]. The years that I would like to travel back to the most is between 1985 to 1995. (Chip-musician Alex Mauer interviewed in Carlsson 2010, p. 43)

As Sandvoss argues, the 'home' of fandom broadly captures the ways in which fans experience and identify with their appropriated objects, texts, and places etc., in a way that can evoke senses of self, belonging and community, and/or emotional warmth. Small's use of the term 'affirmation' parallels the 'home' of fandom in many ways. As he argues, musicking is a powerful means through which we can affirm our desired identities and relationships with the world – a means *through* which fans can affirm the 'home' of their fannish identifications and belongings. We can now understand that, broadly speaking, all forms of identification with chiptune – a sense of identity, creativity, nostalgia, community, and links to other fannish attachments – are musically conjured affirmations or identifications of 'home.'

Yet Small's musicking emphasises music in *action*, performances in *process*. The interest here is not to come to a consensus of what kinds of 'home' chiptune affirms for its fans, but rather to understand what chiptune *does* to engender the affirmations of 'home.' In other words, how we can begin to grasp that special *something* that happens as chiptune's fuzzy sounds and gritty beats resonate into the bodies and imaginations of its fans, because it is in amidst this very process that chiptune fan identities are shaped. With both Small's and Sandvoss's insights in mind, we can begin to consider chiptune as not just a 'home' for its fans but, as it comes to life in musical performance, a 'home' in process: a 'homecoming.'

As fans become immersed, absorbed, and enmeshed into the 'flow' of their media texts they change, they enter a new 'state of being, a form of communication with the text, and sometimes with other participants [...]' (Brooker 2007, pp. 152, 162-3; Duffett 2013 p. 32; cf. Csikszentmihalyi 2002, pp. 40-58). 'Homecoming' captures the ways in which, through the flow of fannish activities, new potential 'vistas of identification,' of 'home,' can open and engender what Mark Duffett describes as the 'knowing field' of fandom (Duffett 2013, p. 124, 154, 295; Duffett 2014 pp. 150-5; Brooker 2007, pp. 150-60). He writes:

[The knowing field] idea helps us to capture one of the most important aspects of popular music fandom: that it is not just a performed role, but a means of entry into a space of [emotional conviction] where one's experience of something strong and positive seems highly personal and yet *more than individual* since it has a direction and intensity that shared [by] many others. [The knowing field is] a process that prompts each participant to redefine [their] subjectivity upon discovering something that [they are] *already about*. (2014, p. 154, emphasis in original)

The personal experience of fandom that Duffett describes involves the co-emergence of two important aspects. The first is a sense of re/joining something, a direct connection to and/or a returning familiarity by way of memory, to which fans attribute meanings and identifications to their experiences (cf. Brooker 2007, pp. 152, 162; Duffett 2013, pp. 124, 162-4). The second emergent quality of the 'knowing field' is the emotional conviction with which fans experience their activities, which can be described as the 'buzz,' a 'frisson of excitement,' senses of proximity, intimacy or 'aura,' or of being 'awash' with what is sometimes described by fans as 'vibes' or 'feels' (Duffett 2013, pp. 124, 138; Duffett 2014, p. 155-6; cf. Hills and Jenkins 2001, p. 33; Stein 2015, p. 156).

'Homecoming' in the context of chiptune fandom, as defined here, captures the co-emergence of these qualities, and the change in the fan as they begin their chip-musicking. 'Homecoming' captures the emergence of a simultaneous sense of intimacy and re/connection with the 'home' identifications of their fandom by way of memory, intertwined with a revitalisation of emotional conviction. This change can occur as fans slide their LSDJ cartridge into their Game Boy and switch it on, as they begin streaming their lovingly crafted chiptune playlists on their morning commute, or as they finally gain access to their favourite PSG sounds through the convenience of a chip-synth VST. 'Homecoming' flows as chip-musicking takes place and unfolds. It modulates with every press of a Game Boy's A and B buttons, with every chirp of a telephone chord, with every depression of a MIDI key, and with every transformation of bland, lustreless cells of assembly or hexadecimal code – either in real-time or pre-recorded – into the audible memories of video games past, the 'beauty' of simple sounds with a big and complex emotional value, and the sound of 'me' (see survey participant 71, age category 19-25, in appendix, p. 229).

Residual evidence of chiptune's fannish 'homecomings' can be traced in the words of the fans, which convey both the identifications of chiptune and the emotional strength of chip-musicking experiences. In a self-written article about chiptune, chip-musician Niamh Houston – AKA Chipzel – writes the following:

I was constantly on the lookout for music that “defined” me [...]. The beauty of chiptune, for me, was the ability to create music without expectation or standards. I was free to recreate whatever I wanted, allowing all my teen angst to flow into a hectic, three-minute piece of emotional bleeps and bloops. As the years went on, I became more interested in what the software could do – how much I could push its limitations, and what mesh of genres I could reconstruct into my own style. (Houston 2014)

Chiptune allows Chipzel, to paraphrase Tia DeNora, to find ‘the “me” in the music;’ as chiptune happens, Chipzel *happens* (2000, pp. 63, 68). Chip-musicking is a conduit through which Chipzel can affirm the ‘home’ of a sense of self. Chiptune resonates with Chipzel’s perception of who she is as, she states, it in some way ‘defines’ her. Chiptune changes her, it *shapes* her. Chipzel *becomes* empowered *through* chip-musicking (cf. DeNora 2000, p. 124; see Chapter 5, pp. 162-76). It is in the ‘flow’ of chip-musicking, as she describes, where Niamh Houston experiences the ‘homecoming’ of herself *as* ‘Chipzel,’ and where her ‘teenage angst’ dissolves in lieu of a new, affirmative vitality.

Similar to Chipzel’s account, chip-musician Josh Davies – AKA Bit Shifter – also traces the ‘homecoming’ aspects of chip-musicking in an interview:

There is something intrinsic to the sound of really primitive synthesis which is really the defining characteristic of chip music. There’s something intrinsic to that sound or that quality of sound... It does, I think, evoke something that is very visceral, whether it’s a memory of childhood experiences or a memory of a particular sound that we have not heard since childhood... I can’t put my finger on what it is that creates that hook for people, and I think it may differ from person to person, but I think it’s [there]. (In Tonelli 2014, pp. 419-20)

As Bit Shifter describes, there is a certain special *something* that he cannot quite ‘put [his] finger on’ or, in other words, capture verbally in definite terms. In fact, such ungraspable and

even unpredictable powers and qualities arguably enhance the ways in which fans experience the ‘homecomings’ of chip-musicking (see Chapter 5 on affect, p. 152).

Even the briefest of comments in online discourses – from chiptune forums to *YouTube* comment sections, *Reddit* posts, and the like – verbally capture the ‘homecoming’ of chiptune fandom as an intersection of personal significance and emotional conviction. YouTuber Redac has uploaded a compilation of Amiga chiptunes – or MOD music – by the famed demoscene artist Jogeir Liljedahl.<sup>66</sup> As is the case with many such chiptune compilation videos, the comments are full of praise for Jogeir’s work and a number of which trace the ‘homecoming’ experiences of chiptune fandom. ‘This goes straight through your heart and brain! The old passion comes back instantly. Thanks :)’ writes YouTuber Redacted (2015). YouTuberRedacted replies to Redacted’s comment in a very fannish manner: ‘right in the feels! :)’ (2019).

These fans do not specify at which point, or which MOD track, these feelings emerged during their chip-musicking, nor is there any elaboration on what the ‘old passions’ Redacted describes are. However, Redacted’s comment succinctly captures the ways in which the ‘homecomings’ of chiptune involves both a sense of re/joining something – as they describe in their claim that ‘the old passion comes back instantly’ – as well as an emotional and bodily response – as they evoke in their description of the Amiga chiptunes surging through their ‘heart and brain.’

Traces of the ways in which chiptune fans have experienced their ‘homecomings’ are also prominent throughout my survey data. In fact, all questions that give fans the opportunity to delve into the ‘what’ and ‘why’ of their chiptune fandom evoke ‘homecoming’ narratives in some way. Describing what they like about chiptune, survey participant 7 writes: ‘I’m pretty geeky and embrace it. I love old video games and pop culture – it just seems to fit with my personality’ (age category 26-35, see appendix, p. 229). As is the case with Chipzel, *something* happens in chip-musicking to produce the ‘fit’ of participant 7’s sense of self. To paraphrase Small, chiptune, for participant 7, affirms ‘*this is who [I] am*’ (cf. Small 1998, p. 212, emphasis in original). As is also the case with my survey data, even the briefest of fannish expressions of love for chiptune evoke the ‘homecoming’ sentiments of chip-musicking, such as that of survey participant 47, who claims that they enjoy chiptune because ‘[the] sound make (*sic*) me feel warm and fuzzy inside’ (age category 36-45, see appendix, p. 229).

In response to the survey question ‘can you describe what you find appealing about chiptune? What do you enjoy about it?’ participant 39 writes the following:

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<sup>66</sup> Redacted



The sound and type of melodies. [Chiptune is] kind of “feel good” music. I guess the sounds brings something back from childhood. [...]. Don’t know why exactly. I guess it’s some kind of nostalgia. It’s from my childhood. Brings back simpler times... [Chiptune is] just fun music. It helps me through hard times, bad days, work, etc... (Age category 36-45, see appendix, p. 229)

Participant 39’s description of chiptune as both ‘feel good music’ and that it brings ‘something back from childhood,’ and evokes ‘simpler times,’ is another apt demonstration of the ‘homecoming’ of chiptune fandom: a sense of emotional familiarity and/or a connection to ‘something,’ and a buzz, a feeling, and an empowerment. The aspect of change in emotion or mood in particular is directly reflected in participant 39’s description of the ways in which chiptune, as they state, helps them through ‘hard times, bad days,’ the monotony of work, and so on – echoing, once more, the notion of fandom as a ‘homely’ source of comfort (see above). We also learn that nostalgia is a notable theme of participant 39’s ‘homecoming’ narrative. For many fans, chiptune acts as a sonic rocket fuel for the nostalgia and this form of ‘homecoming,’ too, can be understood to involve a mnemonic re/connection with something – identifications, belongings, memories, and so forth – along with the intensities, ‘vibes’ and ‘feels’ that fans often describe.

In a more expansive response, survey participant 55 elaborates on their attraction to chiptune, which also centres around nostalgia:

I can’t deny that at least some of my love for the AY8910/YM2419/[SN76489] sound is tied up with [nostalgia], and the games and programs it was associated with, arriving in my life at a very formative age, when all that stuff was still new and exciting and cutting edge in a way that the mundane reality of everyone having a supercomputer in their pocket and an ethereal omniscient robot slave on their bedside table just somehow isn’t any more. It’s a bit of a portal back to an age of wonder where everything was amazing [...]. (Age category 36-45, see appendix, p. 229)<sup>67</sup>

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<sup>67</sup> A series of PSGs. The first two were created by the company General Instrument, with the AY8910 released in 1978, whose technologies went on to be licensed under Yamaha (the YM2419 chip); the Texas Instruments SN series of PSGs were a similar and notable competitor of General Instrument’s hardware (see further in Collins 2008a, pp. 10-5).

The relationship between nostalgia and chiptune will be addressed in detail in Chapter 4. For the time being, participant 39's and 55's mention of nostalgia in their 'homecoming' narratives can begin to set in motion our thinking about how chiptune shapes such feelings for its listeners. The 'portal back to an age of wonder' analogy described by participant 55 is useful here, particularly for our understanding of those fans who, as briefly discussed in the introduction, express nostalgia for a time they 'never knew.' Survey participant 36 states that, in addition to their own enjoyment of chip-musicianship primarily for reasons of playfully overcoming chiptune's constraints, they enjoy listening to chiptune video game soundtracks as '[they let] me feel those vibes without having to play [the video games] or otherwise try to recreate those times' (age category 36-45, see appendix, p. 229).

Another notable and rather touching example of this aspect of 'homecoming' can be observed in the case of survey participant 72 (age category 19-25, see appendix, p. 229). While also a fan of chiptune for reasons of creativity through constraint, for participant 72 chip-musicking has become a means through which they can evoke and revitalise the memories of their father who, they reveal, passed away suddenly. In their own words, chiptune gives them 'the ability to *connect* to something that was taken from me' (emphasis added). Chiptune is also described in their survey response as 'heartfelt,' which, while also linked to the creative aspects they admire about the constraints of chiptune composition processes, is undoubtedly amplified by the fact that such simple beeps and bloops can evoke and maintain such intimate and personal connections (see further in Chapter 6, section 6.2.2).

Music is often fannishly renowned for its 'time-machine' like ability to bring back memories, emotions, and the self-reflexive 'bookmarks' of our lives as though they never left (cf. Sandvoss 2014, p. 134). As Frith states:

[What] makes music special – what makes it special for identity – is that it defines a space without boundaries (a game without frontiers). Music is thus the cultural form best able both to cross borders – sounds carry across fences and walls and oceans, across classes, races and nations – and to define places; in clubs, scenes, and raves, listening on headphones, radio and in the concert hall, we are only where the music takes us. (2002, p. 125)

The 'homecoming' of chiptune fandom, as defined in this thesis, entails the potential emergence of fannish identifications through chip-musicking in addition to *moving* its

musicking fans – whether emotionally, to dance, to tap their feet, to *feel* that they are a part of something simultaneously intimate and collective (cf. Duffett 2013, p. 125).

The ways in which chiptune fans verbally articulate their chip-musicking experiences then also resonate with Will Brooker’s use of the term ‘homecoming’ in the context of television viewing. As fans become immersed into their programmes, they can metaphorically ‘travel without moving’ into the flow of the narrative, the fantasy, as well as the ‘home’ of a sense of belonging from the comfort of their domestic environment (Brooker 2007, pp. 150-1, 164). Tonelli’s exploration of chiptune culture also describes this experience as a ‘spiritual’ or ‘imagined mobility’ which, drawing from the work of Gaston Bachelard, entails a (chip)musically induced shift of liveliness and imagination – an ‘embodied experience’ of motion (2014, pp. 402-20; cf. Bachelard 1988, p. 5; see Chapter 4 on hauntology, pp. 129; see Chapter 5 on affect, p. 152). While Brooker’s work centres on television fans, and Tonelli’s focus is, in part, just the relationship between chiptune and memories of video game play, their descriptions of motion and ‘travel’ are also an integral element to the fannish ‘homecomings’ that emerge through chip-musicking.

Music also ‘connects the individual with the social, and the social with the individual,’ and for many fans, chiptune does exactly that (Frith 2002, p. 109). Just as chiptune acts, in the words of survey participant 55, as a musical ‘portal’ to fannish connotations and their emotional resonances, it too acts as the musical ‘glue’ of the communal belongings of fans both on and offline (cf. Garde-Hansen and Gorton 2013, p. 33; see also Van Elferen and Weinstock 2016, pp. 1-11). The ‘homecomings’ of community form a large part of chiptune’s attraction for fans the world over. For this reason, chiptune becomes a touchstone through which fans can create and maintain social relationships – a ‘conduit between self and other’ (cf. DeNora 2000, pp. 126-7; Hills 2014, p. 16). Participant 31, for instance, states that chiptune combines their love for music and video games and affords a sense of being ‘closer’ to ‘like-minded [chiptune] communities’ (age category 26-35, see appendix, p. 229). This also demonstrates ‘homecoming’ as an emotional knowing of being a part of something, as they describe with the use of the terms ‘closer’ and ‘like-minded.’ Survey participant 16 also expresses sentiments of communal belonging in their response to the question: ‘could you describe what you find appealing about chiptune? What do you enjoy about it?’

[The] small, but very connected community - I just ordered a bit of hardware that was made by a guy from the scene for the scene and even though we are half a planet apart and never met before, we’ve heard of each other and could

talk to each other as friends, not just business contacts. Same goes for LSDJ's [founder] Johan [Kotlinski] who is a person you can reach out to whenever you want if you need something. It's a kind of small scene, which makes it so great and even though in my hometown no one but me is really interested in it, I still don't feel alone. (Age category 26-35, see appendix, p. 229)

Chip-musicking also evokes the 'home' of fandom away from home, so to speak, for fans that listen to and even compose chiptune on the go, as well as attend live chiptune performances. Often promoted on the *Chiptunes = Win blog*, chiptune festivals and live performances take place globally; attendees may not literally be at 'home' in the sense of their house or hometown, but as they travel and come together to listen, to dance, to *music* with chiptune, they experience the 'homecoming' of the self as well as a profound connection with their fellow audience members (cf. Duffett 2013, p. 225).<sup>68</sup> Survey participant 36 enthusiastically divulges how attending a live performance of chip-musician Anamanaguchi did just that:

Camaraderie: the chiptune community is amazing! I don't get to participate as much as much as I'd like but every event I've been to has been blissful. I've been to a huge number of concerts, but never felt as connected to everyone else in the audience as when I saw Anamanaguchi live at the Blind Pig in Ann Arbor, MI, USA and everyone was just so into it in a way I've never seen before or since. (Age category 36-45, see appendix, p. 229)

Survey participant 40 also raises the relationship between chiptune and community:

The chiptune community is by far the friendliest community I've ever been a part of. It is inviting of all types of people, from all around the world. People love this music so much they travel miles to see it live. It feels like no matter how different we are, it's one thing we can use to connect to each other and find common ground. And no matter where I have travelled for chiptune, I always felt welcome, as if these people have known me their whole lives. It was never intimidating, just pure fun. We all just love the music so much, and we rarely

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<sup>68</sup> Available at: <https://chiptuneswin.com/blog/>

let our negativities get in the way of our mutual enjoyment of it. (Age category 19-25, see appendix, p. 229)

Survey participant 40's testament once again echoes the notion of fandom as 'home' as a transformative source of empowerment and self-expression, as well as a conduit for social relations with like-minded fans. This aspect of 'homecoming' is also captured in a Vice Magazine report on LA's budding chiptune scene, where chip-musicking knits together a sense of belonging for a heterogeneous audience:

"A lot of people that go to our shows are people who feel disenfranchised by mainstream culture, whether you're just a nerd, or transgender, or gay or lesbian," Avila explains. "In their mainstream life, they feel anxious and stressed. They come to the show, they feel part of a community. I feel that theme translates into the music, no matter what the medium is: a Game Boy or an electric guitar." (Avila interviewed in Carnes 2016)

Many chiptune fans also cite the constraints of chiptune as a key part of its attraction (cf. Introduction, pp. 11-9).<sup>69</sup> On the topic of creativity survey participant 34 states the following on their enjoyment of chiptune for the 'technical aspects':

I've struggled with the technical aspects of chiptunes myself – from finding the right hardware console, troubleshooting buzzing noises, converting digital to analog, writing midi or composing on a tracker. Chiptunes is not like other genres like jazz or rock where the instruments are at your fingertips. Chiptunes is a labor of love and hacking. The struggle and challenge [of the chiptune composition process] makes it all the more rewarding to me. [...]. There's something about the chiptune community that feels rebellious. We've chosen the harder route to make music. You can't get a chiptune instrument off the shelf at Guitar Center (*sic*). Making this kind of music makes me feel like a mad hacker and I respect and admire others who put the same level of commitment. (Age category 26-35, see appendix, p. 229)

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<sup>69</sup> See survey participant 56, age category 36-45, see appendix, p. 191

The ‘rewarding’ qualities of chiptune’s compositional hurdles also reflect the focus of this chapter: the ‘pay off’ and satisfaction of chiptune’s constraints – the creative ‘tricks’ and ingenuity of the composer – also unfold in chip-musicking. The ‘homecoming’ of chiptune’s ‘authenticity,’ ‘rawness,’ ‘uniqueness,’ and ‘pureness’ occurs as the constraints of chiptune are *heard* in musical performance. It is as Carlsson – who, as a chip-musician, goes under the handle of Goto80 – *musics* with the Commodore 64’s SID hardware, for instance, that they experience the ‘homecomings’ of its desirable glitches and ‘messy’ rhythmic feel (see further in Chapter 3 on ‘chipsound knowledge,’ p. 106). This point is also illustrated in a *Chipmusic.org* forum post by Redacted under a thread entitled Redacted

I’m sure we’re all somewhere on the same page when it comes to this.... I love the limitations. As you all know there are never limitations in terms of the music style or feeling one might want to create. I’m talking purely systematic and hardware limitations. I just like knowing that I’m never very far away from reaching the bleeding edge of what the hardware is capable of. It’s better for my learning and better for my creativity. I [...] think creatively cause the system forces me too (*sic*). And when I finally do finish a song I’m pleased with [it], it makes me all the more proud that I made my happy chip friend in my console sound amazing despite the incredible limitations that it may have. That is my main *drive*, but I very much enjoy the DIY electronics side of stuff, the art in modding, and wowing people with modern music on a console they had as a kid. (2013, emphasis added)

A similar account is made by survey participant 55, who refers to enjoying chiptune’s ‘technical aspects:’

An intricately constructed chiptracker file is much like the work of a skilled weaver, to my mind ... or that of a talented painter who uses nothing more than a brush and some pigments to transcend mere photography and bring fantastic scenes to [life]. Inducing the hardware to make sounds it wasn’t specifically built to make through clever programming tricks, creating the illusion to the ear of many more individual tracks than actually exist by careful temporal interleaving and using masking to trick the human auditory system into

imagining “hidden” beats that aren’t even actually there, like a manual form of psychoacoustic modelling. It’s all extremely clever wizardry that I just can’t quite get my brain around. (Age category 36-45, see appendix, p. 229)

The telephone chords that form one of chiptune’s signature characteristics are such an example of the psychoacoustic tricks that participant 55 describes (cf. Introduction, p. 7). Telephone chords come to life in chip-musicking, in play, as tracker sequencers and chiptune VSTs rapidly shuttle between the root note of the chord and its ascending intervals. Chip-musicking is then an integral aspect to the ways in which chiptune evokes the ‘homecoming’ of musical admiration of creativity and the convictions of ‘authenticity’ (see Chapter 4, p. 148).

For all the subjective variation between chiptune fans and their attachments, chiptune fan identity is, foremost, at ‘home’ in the music. ‘Home’ in the sense that chip-musicking evokes chiptune fan identifications and becomes a conduit for social ties as well as enacting something generative, something that re/vitalises; chiptune fandom comes ‘to life’ in the music. As such, there is also a ‘ritualistic’ element to chip-musicking in Small’s sense of the term. As chip-musician Ed writes:

Perhaps [chiptune is] about preserving a cultural heritage, something that have (*sic*) been part of your personality and everyday life for such a long time that you would be incomplete without it. (Interviewed in Carlsson 2010, p. 48)

Chip-musicking, like all musicking, is ritualistic in that it can evoke relations of deeply personal value. Chip-musicking is also ritualistic in the sense that, to use Ed’s implication, it is the means through which fans can temporarily ‘complete’ themselves and, as such, it is an activity they become drawn towards over and over again (see further in Chapter 6, section 6.2.2). This is not to say that chiptune fans are always drawn towards the same forms of chip-musicking throughout their lives, or with any strict regularity and commitment. Rather, it is the *activity* of chip-musicking, in all its many and varied routes, that forms the ritualistic lynchpin of their fan identities (cf. Frith 2002, p. 125; cf. Introduction, p. 26).

We now have general outline and terminology for the ways in which fans experience chiptune in relation to their identities. Chiptune *does* something to its fans, it changes them, it revitalises their memories and fannish attachments, creates bonds between themselves and other like-minded people, and its constraints open new playful and creative avenues of musicking. I then propose that it is through ‘homecoming’ experiences that chiptune fan

identities are shaped and maintained. To understand the ways in which chiptune shapes fan identities, however, we need to focus on and analytically break down the ‘homecoming’ process. How, exactly, do the ‘homecomings’ of chiptune fandom emerge through chip-musicking?

## **1.2 Chiptune Actor-Networks**

Carlsson’s thesis on chiptune discourses briefly mentions that the immediacy of chiptune – or its ‘homecoming,’ in this study’s terms – emerges through a techno-social process (cf. 2010, pp. 38-9). In the context of his work, ‘techno-social’ describes the interaction that takes place as chip-musicians interact with chip-musical technologies. Something important and transformative occurs in this interaction, and it is this form of interaction that this section expands upon in order to begin the investigation into the ‘homecoming’ process of chiptune fandom.

As Sandvoss argues, the ‘homes’ of fandom are socially constructed (2005, p. 64). Chip-musicking, like all musicking, is also social: it takes place and flows through techno-social *inter/action*. As Bit Shifter puts it: ‘[chiptune is] like collaborating with the program and hardware, there’s a bit of back-and-forth between the device and the operator’ (chip-musician Bit Shifter in Yabsley 2007, p. 17). Chip-musicking forms through social and musical relationships, and it is through these social relations that the ‘homecomings’ of chiptune fandom emerge. To begin to investigate the complex processes through which this occurs, this section contends that we can approach chiptune and chip-musicking through a musicological adaptation of Bruno Latour’s ‘actor-network theory’ (ANT), whose social-technological methodology does not focus on ‘who and why’ but ‘what and how’ (2005).

### ***1.2.1 Musical actor-networks***

Latour argues that any form of ‘reality’ – which include our perception of the qualities, contexts, and properties of our day-to-day experiences – is in fact *socially* constructed and demarcated by interactions within networks of heterogeneous elements (2005, p. 27). Rather than treat social realities as ‘static,’ possessing an inherent and/or homogenous essence, predetermined form, objective quality, or as something that exists in isolation, we should instead look to the ways in which networked relations *produce* these qualities and properties (*Ibid.*, pp. 27-45). At first reading, the use of the term ‘network’ might immediately direct our minds to such things as networks of pipes, or a system with rigidly defined pathways and boundaries. Latour instead argues that a network can consist of any group of things that enter



a relation with one another in any given context. As things enter relations with one another, they begin to network *with* one another (*Ibid.*, pp 31-2, 43). Hence, like Small's approach to musicking, Latour's use of the term 'network' is arguably better suited to being understood as a verb and not a noun. Latour, too, emphasises the importance of process over stability.

Latour argues that it is necessary to observe what both the humans and non-humans are doing within a given network and, importantly, how they interact with one another (*Ibid.*, pp. 31-2, 43). In Latour's analysis, human subject positions and subjectivity – the current social realities in which we find ourselves and the ways in which we perceive our place within these networks – are socially demarcated by *both* human and non-human actors (*Ibid.*, p. 45). Rather than inter-subjectivity – which refers to the social interactions between humans – Latour thus calls for the consideration of inter-objectivity, which recognises all manner of in/part/organic non-human actors and actants in the emergence of social realities (*Ibid.*, p. 195). Latour's ANT thus destabilises any sense of non/human dichotomy and hierarchy, arguing that both humans and non-humans are equally important 'actors' in the formation of social realities. Latour's definition of 'actor' is not used in a theatrical sense. An 'actor,' for Latour, refers to any non/human, in/corporeal, and im/material entity with the capacity to act, to inter-act, and to react or 'be made to act by others' (*Ibid.*, pp. 46, 50, 63, 88). As Latour stresses '[just] because some material element of [a] place does not 'determine' an action doesn't mean you can conclude they do nothing' (*Ibid.*, p. 195). In other words, just because we do not perceive an entity as living or mobile, making a noise, in sight, or as doing something of which we are conscious or able to perceive directly, this does not mean that it is not acting in some way, or that it does not possess the agency to act in future.<sup>70</sup>

Latour further distinguishes two different kinds of actor within an actor-network: 'intermediary' and 'mediatory.' An intermediary actor 'transports meaning or force without transformation: defining its inputs is enough to define its outputs' (*Ibid.*, p. 37). By contrast, mediators have a much more complex and role, as Latour argues:

[No matter how simple they are perceived to be,] mediators cannot be counted as just one; they might count for one, for nothing, for several, or for infinity. Their input is never a good predictor of their output; their specificity has to be

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<sup>70</sup> The social reality of the 'living room,' for example, is constructed through a heterogeneous network of specific forms of furniture, framed art and photographs on the walls, electrical goods, ornaments, the pigment of the wallpaper, the ways in which the light is allowed into the room by way of the window shape and the blinds, and so on. No matter how seemingly inert or innocuous these actors may be, all possess agencies that mediate the emergent qualities of the living room as a social reality.

taken into account each time. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry. (*Ibid.*, p. 39)

The distinction between intermediaries and mediators depends on the intentions of the researcher and the nature of the actor-network under the lens. In the actor-network of the garden, for instance, the hosepipe can be considered an intermediary actor in that it transfers, but does not transform, the water it carries by the basic principle of its design. As an intermediary actor, the hosepipe transfers water from the outside tap to the flower bed; water is both the hosepipe's input and its output. If we were to view the hosepipe as a mediatory actor, however, we might instead consider how the material of the hosepipe transforms the taste and smell of the water, or the ways in which the spray pattern on the hosepipe's nozzle distributes the water into the flower bed, and how this, in turn, mediates the growth of the vegetation.

Just as media theory argues there is no media without mediation, Latour posits that there is 'no information, only transformation' (McLuhan and Fiore 2001, pp. 3-7; Latour 2005, p. 149). Through this notion, Latour emphasises that mediatory actors are the important ones within actor-networks: they are the ones which transform the emergent qualities of social realities by imposing their agencies on the non/human other actors within the network. It is then arguably more fruitful to consider all human and non-human actors as mediators in the study of social realities.

Latour also uses the term 'actant.' This term can refer to a cluster of heterogeneous actors that act together as a perceived 'thing' or collective force, for instance a swarm of bees; it can also refer to an abstract entity with no corporeal and/or concretely-defined form or object – such as concepts, memory, and ideology – but is nonetheless active (*Ibid.*, pp. 53-5). Very often, actants are both composed of a cluster of actors as well as abstract entities. Our memory, for instance, can be considered a non-human actant in that it is not something we can concretely define in terms of a stable object, but it does possess a prominent agency in our daily lives – guiding our behaviours and perceptions – and is itself constituted of many strands of other heterogeneous non-human elements, such as knowledge, memories of particular experiences and personal relations, cultural traditions, etc. (see further in Chapter 3).

For Latour, inter/action is not a case of linear cause and effect; inter/action can cause other things to start acting, can network new actors into inter-objective relations, and action itself is in no way exclusive to one single actor – operating in isolation as what we might perceive as the 'source' at the centre of a network (2005, pp. 59, 64). The inter-objectivity of

an actor-network has no inherent centre, source, or hierarchy; the constellation of inter/actions that form and drive social realities are continuously unfurling, moving, and modulating through subsequent ones – action is dislocated, distributed, and constantly ‘other-taken’ (2005, pp. 45-6). Action, furthermore, ‘is not always done under the full control of consciousness’ (*Ibid.*, p. 43-4). Through the very shifting actor-networks that form them, all social realities undergo constant shifts – no set inter-objective relations are permanent, stable, or inherently ‘there.’ As inter/action is the driving force behind the emergence of any social reality, the inter-objectivity of any actor-network – and thereby the social reality it collectively mediates – is inherently unstable. Consequently, human subjectivity remains in continual flux.

The task presented by ANT, then, is to identify which non/human actors and actants are the important mediators of a given social reality, identify which form of mediatory agency they possess, and then ‘follow’ these actors through their inter-objective relations (*Ibid.*, p. 11). In other words, this is ANT’s ‘what and how’ methodology: what is inter/acting in a given social reality, and how, exactly, do they inter/act with one another to engender its grouping and its emergent qualities.

Latour’s insights are helpful for musicological analysis and are adapted for such a task by Charlie Blake and Isabella van Elferen. Blake and Van Elferen explore the ways in which musical performativity engenders musical actor-networks and social-musical realities (2015, p. 67; cf. Van Elferen and Weinstock 2016, pp. 55-6). To do so, they build on Latour’s insights and contend that the inter-objectivity of music is not only informed by human and non-human actors but, specifically, *musical* and *non-musical*, human and non-human actors (Blake and Van Elferen 2015, pp. 67-8). This musicological addition is extremely useful, because it prompts us to consider the ways in which the actors of human performers, listeners, and any form of music technology – amplifiers, headphones, guitars, Yamaha DX7’s, MIDI cables, MilkyTracker, and so on – co-mediate the emergence of musical properties and experiences. Importantly, Blake and Van Elferen’s consideration of musical and non-musical actors also helps us to grasp the unfolding of musicking and sound *itself* in terms of actors, actants, and agency (*Ibid.*, p. 67).

Harmony, timbre, melody, rhythm, and metre, for instance, are all forms of non-human, musical actors and actants found within a musical-actor network, and all possess mediatory agencies that shape social-musical realities.<sup>71</sup> In line with Latour, Blake and Van Elferen argue

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<sup>71</sup> Arguably, there are no intermediary actors in musical actor-networks (cf. Van Elferen and Weinstock 2016, p. 59).

that each non/human and non/musical actor and actant will possess a different and unique form of mediatory agency, which will consequently mediate social-musical realities accordingly. Major chords have a very different mediatory agency to minor chords, for instance; analogue synthesizers will mediate sounds in different ways to digital ones; different microphones have different frequency responses; whispering the words ‘such a shame’ in a song engenders a different musical performativity in comparison to singing them, even if the words are the same (cf. *Ibid.*, p. 68).

Developing Latour’s insights further, Blake and Van Elferen argue that the unfurling inter-objectivity of musical actor-networks will simultaneously engender ‘immanence and composition’ with every inter/action. ‘Immanence’ refers to the ways in which musicking can stir the emergence of musical meanings, such as memories, connotations, identifications, or perhaps aesthetic responses (*Ibid.*). ‘Composition’ refers to the ways in which musical actor-networks, by the very nature of musical performativity, are in continual flux; every new musical inter/action, sonic utterance, or, in the case of chiptune, bleep and bloop will bring with them a shift in social-musical relations, leading to often unpredictable ‘re-contextualisations, re-inscription, and the re-creation of old and new [meanings]’ (*Ibid.*). Just as Latour’s ANT methodology suggests, in order to chart and analyse the complexities of social-musical realities, we must decipher which mediatory agencies are present within musical actor-networks as well as observe the ways in which they converge.

### ***1.2.2 Chiptune’s primary mediators***

A musical actor-network approach is a useful way to break down and explore the musical processes that shape the ‘homecomings’ of chiptune fandom. We can begin by framing the ‘homecomings’ of chiptune fandom – any of the potential categories typically outlined in sociological approaches to chiptune – as social-musical realities: they are socially constructed through the inter-objectivity of chiptune actor networks (cf. p. 30-2). As chip-musicking begins, fans become a part of the inter-objectivity of a chiptune actor-network as a human mediatory actor. Within a chiptune actor-network, the musicking fan is both un/consciously acting and being acted upon as they musically play their Game Boys and dance; the ways in which they perceive their ‘homecomings’ are mediated by the agency of *every* other non/human and non/musical actor and actant present (see Kassabian 2013 on ‘distributed subjectivity,’ pp. xxiv-xxvi, 103; cf. Blake and Van Elferen 2015, pp. 69-70).

The ‘homecomings’ of chiptune fandom are also subject to the simultaneity of immanence and composition as an essential tension. They are immanent because, as section

1.1 of this chapter contended, chip-musicking evokes the return of musical meanings, connotations, identifications, community, etc. and an emotional intensity or shift in vitality. They afford composition because, as chip-musicking flows through continual inter/action, with every unfolding of a white noise beat or microsecond interval of a telephone chord, social-musical relations and ‘homecoming’ perceptions inevitably shift.

No matter how intense or strong the ‘homecomings’ of chiptune fandom are, no matter how ‘authentic’ or potent musical meanings may be, these social-musical realities are dependent on non/human and non/musical interactions which are, by way of their very inter-objectivity, unstable and impermanent. Hence the ritualistic aspect of musicking that Small identifies. If we are to argue that chiptune fan identity is shaped in the music, then we are faced with the challenge of articulating the essential tension between the convergent inter-objectivity and instability of social-musical realities, and the abstract and conceptual, but embodied and perceptively stable dimensions of fan identity. How, exactly, can we understand chiptune fan identity as something that is at once perceived and experienced as stable and familiar, and yet is unstable by way ever-shifting social-musical relations?

In addition, we also must account for the fact that not only are the ‘homecomings’ of chiptune fandom heterogeneous and subjective to each fan, and unique to each and every act of chip-musicking, but they are also mediated by a potentially innumerable number of non/human and non/musical actors and actants. Based on the consistencies identified in fan testimonies, online discourse, and analyses of chiptune compositions, however, we can argue that there are three primary forms of mediatory agency integral to the inter-objectivity of all chiptune actor-networks: chip-musical technologies, chiptune fans, and chipsound timbres. These mediators are where we should centre our analytical focus – they are fundamentally, to paraphrase survey participant 72, ‘what makes chiptune... *chiptune*.’

In order to understand the processes through which chiptune’s ‘homecomings’ are shaped, we can first identify how each primary mediator acts within chiptune actor-networks, establish what kind of mediatory agency they possess, and then explore how their agency shapes – and is, moreover, integral to – the ‘homecomings’ of chiptune fandom. With this established, we can then observe how these primary mediators musically interact with one another, and how the convergent inter-objectivity of these musical interactions engenders the ‘homecoming’ of chiptune fandom. From here, the relationship between the ‘homecoming’ process and the shaping of chiptune fan identity can be addressed. To that end, the next chapter will begin the exploration of chiptune’s three primary mediators.

## Part II:

### Chiptune's Primary Mediators

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## Chapter II

### Chip-musical Technologies: The Remediation is the Message

Some of [my enjoyment of chiptune] is maybe just pleasure at seeing what would otherwise be thought of as junk equipment getting a new, crowd-pleasing lease of life rather than being sent to the scrapheap, never to pass electrons through its circuits [...] ever again. (Survey participant 55, age category 36-45, see appendix, p. 229)

Chiptune fans listen to and play with their beloved bleeps, classic sounds, and PSG technologies in a vast number of ways. Some chiptune fans lovingly preserve hardware PSGs and old computer platforms, pushing the boundaries of these technologies, hacking into their audio architecture, and connecting them to musical effects units and MIDI controllers in their chip-musicking. Some chiptune fans prefer to compose using VST plugins on their modern DAWs, or apps on smartphone/tablet devices. Even analogue, digital, and virtual synthesizers can produce waveforms that, to the average listener, are evocative of both 8-bit and 16-bit timbres. Survey participant 11, rather uniquely, finds that varying modes of public transport are the perfect source of inspiration in which to craft their chiptune compositions (age category 26-35, see appendix, p. 229). For Goto80, the characterful and unpredictable bugs and glitches of the Commodore 64's SID chip – hardware, not emulated – are both 'extremely inspirational' and desirably 'messy' (in Nova 2014, pp. 84-6). YouTuber LOOK MUM NO COMPUTER took the time to create a wholly new beast of a chiptune instrument by wiring together 24 Game Boys, MIDI conditioners, and control voltage (CV) interfaces into a towering, custom-built wooden casing.<sup>72</sup> As the tag line for the website *micromusic.net* aptly puts it, chiptune is 'low-tech music for hi-tech people' (2019).<sup>73</sup>

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<sup>72</sup> See full video at: <https://www.youtube.com/watch?v=nqA1yMD2yws>

<sup>73</sup> An online chiptune repository and community. Available at: <https://www.micromusic.net/>

As I emphasised in the introduction, not all chiptune fans are composers. Listening to chiptune can also be achieved through multiple online sources and on-the-go through smartphones and portable music players. Some prefer to access their favourite bitpop beats, or perhaps video game soundtracks, by means of playlists on such streaming services as Spotify, or perhaps prefer instead to haunt the online vaults of *The MOD Archive*<sup>74</sup> and *Zophar's Music Domain*.<sup>75</sup>

The technologies through which chip-musicking can take place in the present day are manifold and in continual development. If we are to understand chip-musical technologies as one of the primary non-human mediators of chiptune's 'homecomings,' then the task at hand is to define the agency of chip-musical technologies in a way that applies to all their heterogeneous formats, as well as account for the variations unique to every instance of chip-musicking. Section 2.1 begins by arguing that all forms of chip-musicking involve the mediation of PSG audio processing: the self-imposed use of constraints through various chip-musical technologies and/or the presence of chipsound timbre. Here, I define PSG mediation as chiptune's 'consistent distinctiveness,' and contend that the potential for PSG mediation – in any format – is the mediatory agency possessed by all chip-musical technologies (Hodkinson 2002, p. 30). Building on this argument, section 2.2 then argues that chiptune persists through acts of what Jay David Bolter and Richard Grusin call 'remediation' (2000, pp. 2-20). Once this lens is defined, this section will then explore the ways in which PSG remediation takes place through varying forms of strategy, depending on the chip-musical technologies in question. Through the arguments presented in sections 2.1 and 2.2, this chapter contends that chip-musical technologies mediate the 'homecomings' of chiptune fandom as the agents that network chiptune's non/human actors together.

## **2.1 Chiptune's Consistent Distinctiveness**

While almost instantly recognisable to the average ear, chiptune is a slippery thing to capture and concretely define and fans themselves have long since discussed how they personally feel about the matter. The discourse within the community, as participant 69 from my survey remarks on the topic of chiptune and 'authenticity,' is ever-shifting (age category 19-25, see appendix, p. 229; see Polymeropoulou 2014). While the ways in which fans narrate their

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<sup>74</sup> An online repository of module files, many of which are collected from video game soundtracks and cracktro/demoscene artists. Available at: <https://modarchive.org/>

<sup>75</sup> An online repository of video game music spanning a multitude of different platforms. Available at: <https://www.zophar.net/music>

adoration for and commitment to chiptune can detail a multitude of different qualities, memories, and a vast array of chip-musicking practices, there is a commonality that runs through, and seemingly underpins, all fannish attachments.

For chiptune fans, less really is *more*. If there is one factor that unifies chiptune fans, permeates throughout their chip-musicking, and anchors their ‘homecoming’ experiences to their chiptune fandom, it is the constraints of PSG audio. Becoming creative within and around chiptune’s technical constraints, and moreover hearing the resulting intricate and rich compositions, is an integral aspect of chiptune’s fannish enjoyment. The focus in this section are the constraints themselves, specifically the ways they form the very ethos of chiptune, underpin all forms of chip-musicking and are, thereby, integral to the ‘homecoming’ process.

PSG constraints can be identified by two common factors, which intertwine through chip-musicking: constrained compositional affordances and constrained timbral palettes, typically 8-bit or 16-bit in style (cf. Introduction, pp. 7-11). These restraints are actively sought out and imposed by chiptune fans in their chip-musicking practices. As survey participant 36 writes:

Constraint: the world we live in now is impossibly rich with possibility; anyone with a \$35 Raspberry Pi can emulate almost any other machine throughout time, and the access to production tools and level of fidelity etc. is unprecedented. Sometimes all of this choice and capability can be overwhelming, so I actually *seek out constraints* when composing or e.g. programming for fun. The limited range of a [Game Boy] is more appealing to me than having an entire orchestra at my fingertips. (Age category 36-45, emphasis added, see appendix, p. 229)

These constraints are imposed by the chip-musical technologies chosen by fans for their musicking practices. As Yabsley contends, ‘the only things consistent with chiptune are the tools, which are appropriated from video game technology’ (2007, p. 2). In the age of chiptune emulation, however, this argument only holds true to a degree. It is rightly problematised in the work of Carlsson (see 2010, pp. 11-2). As he points out:

Technology was said to be the distinctive feature of “real” chipmusic, and dialogues with other cultural fields were discarded as “fake.” In this sense, there was a conflict between those who saw chipmusic as a style, aesthetics or genre



and those who saw it as a consequence of technology. (*Ibid.*, p. 11; see also Carlsson 2008)

The point of compositional constraint is furthered by chip-musician Anamanaguchi, who asserts that chiptune is not ‘a genre’ but a ‘medium’ (in Farah 2013). Anamanaguchi’s statement regarding ‘genre’ makes the same problematic distinction that Carlsson addresses. Regardless, the important element of Anamanaguchi’s statement is the description of chiptune as a ‘medium.’ To echo Anamanaguchi and to paraphrase Marshall McLuhan, one of the key founders of media theory, for chiptune ‘the medium’ – or, rather, the ‘mediation’ – truly is ‘the message’ (see McLuhan and Fiore 2001, p. 16).

‘Mediation’ refers to the ways in which media is shaped by the imposed qualities of transmission technologies which, typically, are contoured through an interaction between the medium and the user (Silverstone 2006, pp. 55-80). All forms of camera lens, for example can be said to perform consistent optical functions in photography: to enable the user to focus on a subject, to focus light, and to zoom. Yet, there are also many different forms of camera lenses, all of which mediate the capture of the photograph in unique ways. Fisheye lenses, like any form of camera lens, enable the user to focus on a subject, to focus light, and to zoom. Yet the ways in which these functions can be performed, and shape in the resulting photograph, are mediated by the convex shape of the lens.

Chiptune is not anchored to a consistent set of ‘tools’ but to its mediation. If ‘the message’ that fans aim to achieve through imposing PSG constraints is ‘chiptune,’ then mediation refers to how these constraints shape that message. PSG constraints are the semi-consistent mediatory seedbed of all chip-musicking. Chipzel illustrates this point: ‘[chiptune is] an art form defined by its technology, rather than its [musical] structure, within which an artist can create their own unique compositions based upon their individual musical influences’ (Houston 2014). The technologies that mediate chip-musical practices – such as tracker sequencers, limited monophonic audio channels, and the need for tricks – are not limited to specific ‘tools’ and technologies in the age of emulation. Moreover, each PSG will mediate chip-musicking practices in different ways due to their own unique audio architecture. In addition, the chip-musical technologies through which fans can musically manipulate the constraints of PSGs – whether ProTracker on Amiga A500 hardware, by way of the Logic Pro DAW, or by iPhone – also factor into the mediation process and can even expand the number of chip-musicking possibilities (see ‘ludomusical fields’ in Chapter 5, p. 163).

In addition to the constraints of PSG composition, having less to work with, play with, and save with, chiptune also thrives in having ‘less’ in terms of audio quality, bitrates, and sound palettes: in other words, chipsound timbre. Many fans – particularly those who do not compose chiptune – regard chipsound timbre as chiptune’s main qualitative staple, with some even emphasising the unifying aspect timbre of over the technology. Under a *Chipmusic.org* forum thread entitled Redacted a chiptune fan under the handle of Redacted writes:

The timbre [of] chip music is the only unifying element between all the music that falls under the category of chip music. The hardware will definitely disappear and change. As long as the timbre is culturally relevant, people will use the sounds in their compositions. Nostalgia was never a point of interest for myself. I like the sounds, the idiom of composition unique to the hardware, and the pragmatism of minimal gear for shows. (2015)

Similarly, on the topic of chipsound timbre, participants 72 and 46 from my survey write the following:

[Retro sounds] are what *makes* chiptune... chiptune. (Survey participant 72, age category 19-25, emphasis added, see appendix, p. 229)

Chiptune *sounds like* chiptune. So, it’s different [...]. (Survey participant 46, age category 26-35, emphasis added, see appendix, p. 229)

Yabsley is right in saying that the choices in rhythm, melody, harmony, form, and so forth vary drastically from chiptune artist to artist, and song to song (2007, p. 2). It is therefore very difficult to define chiptune based on these factors. However, Yabsley argues that the same applies to chipsound timbre and this is also correct only to a degree. As discussed in the introduction, chipsound timbre is itself a diverse qualitative category. Even when grouped into the subcategories of 8-bit and 16-bit timbral characteristics, within these parameters there exists a universe of unique traits from different kinds of chipsound waveforms, filter qualities, to the ways in which some PSGs handle portamento and pulse width modulation (PWM), and to DAC capabilities. Moreover, chipsound is subject to timbral variation as well as further manipulation in the process of chip-musicking. A common practice among chip-musicians, for

instance, is to run a Game Boy through a Korg Kaos Pad in live performances (see Introduction, p. 18).

Once again, the unifying factor throughout the kaleidoscope of qualities that define chipsound timbre is PSG mediation. When we identify a timbral quality as ‘chipsound,’ we are hearing some form of PSG mediation taking place: that the sounds we hear are strained against the technological constraints that mediate it, rendering it distorted, ‘raw,’ and, in the fannish ear, resplendent in its lo-fi character. Logic Pro’s ‘bit-crusher’ plugin can be considered a mediator of chipsound timbre in that it emulates low sample rates and, thereby, generates crunchy aliases in the audio signals that pass through it (cf. Introduction, p. 7). In effect, the mediation of the bit-crusher plugin can add an extra layer of distinctive chipsound grit to the most hi-tech of synthesizers; downgrade perfectly sampled percussive hits, so that they now sound like the transients of their waveforms have been chewed up and spat out by an 8-bit DAC; turn orchestras recorded with professional clarity into SNES RPG soundtracks; and human vocals into sounding like they are emitting from an early text-to-speech synthesis program.

Thinking of chiptune’s distinguishing commonalities in light of mediation dissolves any barrier or distinction between the notions of chiptune as entirely about hardware and ‘authenticity,’ or chiptune as an ‘aesthetic,’ a ‘genre,’ a ‘sound,’ and so on. Mediation intertwines *both* commonalities; it is *through* the mediation of PSG constraints – hardware, emulated, and so on – that chiptune both becomes playfully limiting and gains its distinctive timbral quality in a way that fans enjoy. These two common factors of mediation also intertwine in the ‘homecomings’ of chiptune fandom. As survey participant 5 describes:

One of the defining aspects of chip music is the pairing of simple synthesis with fast and precise parameter control. Early PSGs were memory-mapped devices controlled directly by register writes from the CPU. Nearly all of the common chiptune techniques and sounds, even modern-day emulation, are related to this early reality. The “fast arpeggio” [telephone chord] is an obvious example, as it makes up for lack of polyphony with fast and precise pitch changes. This interplay is a core element of what makes the chiptune aesthetic different from the aesthetic of other early synth music and constitutes a key reason that I find chipmusic interesting to listen to and compose. (Age category 26-35, see appendix, p. 229)

The PSG constraints that mediate the play and the experience of chip-musicking – at once recurring and heterogeneous – can be understood as chiptune’s equivalent of what subcultural theorist Paul Hodkinson terms ‘consistent distinctiveness.’ ‘Consistent distinctiveness’ refers to a ‘set of shared tastes and values that are distinct from those outside the [subculture]’ (Hodkinson 2002, p. 30). These shared tastes and values are ‘reasonably consistent, from one participant to the next, one place to the next and one year to the next’ (*Ibid.*). Hodkinson coined this notion in his exploration of goth subculture. In his work, Hodkinson identifies the semi-consistent styles in goth aesthetics, such as those of clothing, hair, and makeup. Yet, as he emphasises, within each consistent factor – perhaps black nail polish, capes, Demonica boots, and clove cigarettes – there exists a plethora of diverse and individual variations according to every participant (*Ibid.*, pp. 30-2; see also Van Elferen and Weinstock 2016, pp. 11-51). The term ‘consistent distinctiveness’ aims to account for the fact that there are commonly recurring stylistic elements that contribute to a subculture’s sense of identity, but by no means are they concretely stable, nor homogenous in their use (Hodkinson 2002, p. 30).

PSG mediation is the consistent distinctiveness of chiptune in all its musical heterogeneity. The consistent foundations of chiptune are the constraints of PSG mediation, both pragmatically and sonically, but the ways in which these constraints are appropriated and musically manipulated through chip-musical technologies are distinctive in every appropriation – the ever-changing factor. Thinking of this in relation to chiptune fan identity and musicking, PSG mediation is not only ‘the message,’ but PSG mediation is also ‘home.’ Chiptune fans actively self-impose PSG constraints and seek out ways in which to mediate chipsounds in view of their ‘homecomings.’ Even listening to favourite chiptune artists and old video game soundtracks on an iPhone, or through online VGM players and *YouTube* is a means to engage in chip-musicking and to hear the PSG mediation that so integrally forms ‘the sound’ of chiptune, of ‘home.’ PSG mediation thus lends chiptune its musical-technological identity as well as the consistent distinctiveness of chiptune fandom. Contemporary chiptune culture, and thereby chiptune fan identity, can then be understood as perpetuated through chip-musical technologies that afford varying strategies of PSG *remediation*.

## **2.2 PSG Remediation**

In their seminal work *Remediation: Understanding New Media*, Bolter and Grusin challenge the modernist view of new media technologies: the perceived linearity of their development, through which they render old media obsolete and entirely divorce themselves from their aesthetics and modes of operation (2000, pp. 3-15). Instead, Bolter and Grusin propose that

new media technologies in fact absorb and reform old ones in their continual development – at times keeping certain aesthetics, technological, and cultural principles, and discarding and improving on others (*Ibid.*, pp. 37, 47-8, 59, 74, 273). This process is defined by Bolter and Grusin as ‘remediation,’ put simply: old media in the new (*Ibid.*, pp. 28, 44-5, 53, 59).

Bolter and Grusin argue that remediation takes place through 3 different but often intersecting ‘strategies’ (*Ibid.*, p. 5). The first is ‘transparent immediacy’ (*Ibid.*, pp. 14, 23, 272-3). ‘Immediacy’ is described by Bolter and Grusin as the ways in which media creates for the user an ‘immediate relationship to the contents of a medium;’ this can include a sense of ‘presence,’ ‘liveness,’ or ‘a contact point between the media and what it represents’ – for instance, a sense of realism, ‘authenticity,’ or ‘actually being there’ – which, they contend, audiences actively desire (*Ibid.*, pp. 5-6, 22-3, 30, 316-8; see Chapter 6 on desire, p. 199). The remediation strategy of transparent immediacy thus describes the ways that some media interfaces aim to make the user forget about the medium itself, and thereby achieve a greater sense of immediacy or immersion for the user (Bolter and Grusin 2000, p. 318).<sup>76</sup>A notable example Bolter and Grusin use to explain transparent immediacy is the sense of immersion afforded by virtual reality (VR) technologies (*Ibid.*, pp. 3-5).

The second strategy, ‘hypermediacy,’ reflects ‘the medium is the message:’ it refers to the deliberate emphasis of mediation in order that the user becomes aware of the medium that they are operating or experiencing (*Ibid.*, p. 31). Computer word processors, for instance, use the hypermediacy remediation strategy to mimic older word printing technologies – as seen in digital fonts that emulate the ink texture and typeface of typewriters, and the ink calligraphy typically seen on old manuscripts. Hypermediacy strategies can then become an active and self-aware means to conjure a sense of immediacy, which reveals that remediation operates through the tension of a paradoxical double logic. Where transparent immediacy strategies aim to erase traces of mediation to achieve a greater sense of intimacy and ‘reality,’ the hypermediacy strategy can achieve the same thing by doing the very opposite (*Ibid.*, pp. 5, 31, 55-61). The hypermediacy strategy generates immediacy not by erasing traces of mediation, but by emphasising them – be they VHS glitches, tape saturation, vinyl crackles, or PCM aliases. In this sense, the presence of the medium *itself* becomes integral to that which the desired experience of the user.

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<sup>76</sup> This is not to say, however, that the user becomes *entirely* unaware or ‘fooled’ by the immediacy or apparent ‘reality’ the media evokes (cf. Bolter and Grusin, p. 5).

The third strategy identified by Bolter and Grusin is ‘retrograde remediation’ (*Ibid.*, p. 147). Retrograde remediation describes the ways in which older media imitate and absorb elements from newer media, typically to expand their mediatory capacities in order to extend their lifespan in the face of new media efficiencies (*Ibid.*, pp. 147-9). They use the example of 1990s Disney animated films to explain this remediation strategy. Disney films of this period were still predominantly hand drawn and animated, but computer technology was often incorporated into these movies to help achieve, for instance, special effects shots and complex camera movements that are too complex to achieve by traditional animation methods (*Ibid.*).

While Bolter and Grusin’s work on remediation centres on visual media, their work gives us new ways to think about the consistent distinctiveness of chiptune in the present, and a way to approach the mediatory agencies of chip-musical technologies in the ‘homecomings’ of chiptune fandom. Chiptune fan culture both bridges and blurs the distinction between old and new media, and the means through which its composition practices and aesthetics both survive and continue to grow can be considered as the remediation of PSG constraints by definition (cf. Introduction, pp. 4-19). Chip-musical technologies – in all their guises – are the tools through which the remediation of PSG constraints take place, and all three strategies that Bolter and Grusin apply to visual media are also applicable to chiptune.

For a start, chiptune’s consistent distinctiveness can be considered exemplary of hypermediacy as well the double logic of remediation. In stark contrast to the clarity and high quality of contemporary music production techniques and means of audio mediation, the hypermediacy of chiptune and the constraints of PSG mediation thrive in what Bolter and Grusin describe as the ‘ruptures’ of media. In the context of their focus on media visuals, ruptures can refer to a range of glitches and malfunctions, over-saturated colours and low-resolution graphics (Bolter and Grusin 2000, pp. 14-23, 31). The ruptures of media, in other words, play a key role in making the user aware of the medium. While PSG mediation is not definitively a ‘rupture’ in Bolter and Grusin’s sense of the term – although ‘glitched’ sounds and visuals do form a part of chiptune’s aesthetic – the ‘ruptures’ of chiptune lie in the audio in/capabilities of PSGs. 8-bit and 16-bit sounds can both be considered forms of hypermediacy: emphatically characterised as ‘chipsound’ by way of what PSGs *cannot* do as much as what they can do. Every strand of chipsound hypermediacy, and even within each chipsound category of 8-bit and 16-bit, broadly speaking, is defined by its own unique ruptures – emerging through their own unique forms of mediation – that demarcate the distinctiveness of their compositional and timbral qualities.

Fundamentally, then, chiptune is a self-aware practice of hypermediacy (see Chapter 4 on hauntography, p. 137). In the context of chiptune fandom, the double logic of remediation becomes even more apparent. The sense of ‘immediacy’ that Bolter and Grusin describe – a sense of presence or intimate connection with the contents of the media – can be understood as the ‘homecoming’ of identifications in the context of this study. Chip-musicking, as argued in Chapter 1, is the conduit to the immediacy of ‘home’ for chiptune fans, and PSG mediation is the consistently distinctive factor present in all chip-musicking practices. Acts of chip-musicking, in fact, necessarily hinge on hypermediacy, and the chip-musical technologies that fans choose in the process – a Commodore 64, Simple Samples’ ‘16-bit Toolkit,’ *Beepbox.co*, or *YouTube* – remediate the presence of PSG constraints in some form (cf. Bolter and Grusin 2000, p. 65).<sup>77</sup>

Even the more ‘purist’ and strictly hardware-based chiptune practices are subject to the remediation strategy of hypermediacy. The video game and home computer technologies that saw the birth of various cracktro and demoscenes are still in use today. Some chiptune fans still compose using their faithful Commodore Amiga and Atari ST computers, to name a few examples, because they offer something unique, which some attribute to the rhythmic ‘feel’ of their MIDI timing that is apparently unlike anything the clinical ‘perfection’ of a contemporary DAW can muster.<sup>78</sup> Chip-musician Patric Catani makes a similar claim as he describes his attraction to the chiptune tracker sequencer LittleGPTracker, developed by Marc Nostromo.<sup>79</sup> In his interview with Carlsson, Catani claims that tracker sequencers provide a unique ‘groove’ and ‘feel’ that he cannot achieve with other forms of music technology (in Carlsson 2010, p. 26).

[Nostromo] managed to make the timing [of LittleGPTracker] very musical. The ProTracker gives me the same feeling. It is just going round and you have the feeling of a tape machine or jamming unit rather than a computer that simulates a music machine. I really can’t exactly explain it. It is more a feeling. [...] It has a sort of feel as if the machines were built for doing that. Especially the Amiga gives me a sort of Roland [TR]808 [drum machine] flavour by times. (In Carlsson 2010, p. 26)

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<sup>77</sup> Website: <https://www.simplesamplesaudio.com/products/16-bit-toolkit>

<sup>78</sup> I would like to thank Tarik Ech-Charif for sharing this view with me.

<sup>79</sup> <https://www.littlegptracker.com/>

The continued use of original PSGs and chip-musical technologies is the self-aware use – and thereby a hypermediacy strategy – of an obsolete medium in an age of multiple possibilities and constraint-free musical practices (see hauntography in Chapter 4, p. 137).

Transparent immediacy and hypermediacy then also operate together in chiptune’s fannish appropriation. This double logic is most prevalent in the emulation and sampling of PSGs, and the recreation of tracker sequencer software for contemporary operating systems. Chip-synth VSTs and emulations of tracker sequencer software are examples of an old medium absorbed into the new, in which certain aspects are retained, and others improved upon or dropped entirely. In the case of chiptune VSTs, transparent immediacy and hypermediacy oscillate between one another in a double capacity: first, chiptune emulations foreground PSG mediation to remind the user of the medium; second, by foregrounding PSG mediation, chip-synth VSTs and recreated tracker software generate a sense of immediacy and obfuscate the fact that the PSG they are hearing is emulated. Just as Bolter and Grusin stress, this is not to say that chiptune’s emulators entirely aim to make the chip-musicking fan forget that PSG emulation is taking place – especially when we consider that ‘fake-bit’ has become an accepted chiptune subgenre of its own standing – but rather that the emulator in some way dissolves in its use, giving fans a sense of direct access to the hypermediacies of ‘home’ (cf. Polymeropoulou 2014).

The Chipsounds plugin by *Plogue Art et Technologie* Inc can illustrate this point.<sup>80</sup> *Plogue’s* Chipsounds is an 8-bit chip-synth VST designed to be used either as a stand-alone synthesizer or plugin within a modern DAW and emulates the mediation of a diverse range of 8-bit PSGs from the 1980s and 1990s – ‘on top of,’ as *Plogue* promise, ‘all of their variants’ (2020). In addition to an expansive range of PSG mediations, Chipsounds also offers a number of addons and contemporary effects, such as emulated reverb and delay algorithms.

By combining the painstaking emulation of original PSG hardware with contemporary improvements and flexibility, *Plogue’s* Chipsounds perfectly demonstrates the interplay between transparent immediacy and hypermediacy. It affords the transparency of retaining PSG mediation and constraints by way of hypermediacy strategies, whilst incorporating the ability to control, play, and record these PSGs through any potential MIDI devices and audio manipulation plugins, as many audio channels as the artist desires, and contemporary musical production techniques. *Plogue* state on their website:

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<sup>80</sup> Available at: <https://www.plogue.com/products/chipsounds.html>



[Turn] your [instrument host] into a classic video game console, vintage 8-bit home computer and even an 80's arcade. *Plogue* chipsounds *authentically* emulates 15 vintage 8-bit era sound chips [...], down to their smallest idiosyncrasies. But more interestingly, it also faithfully allows you to dynamically *reproduce* the accidentally discovered sound effect tricks and abusive musical techniques that were made famous by innovative chipmusic composers and classic video game sound designers [...]. In short, whether you are already versed into [chiptune] or just interested in those sounds, this is one unique instrument for you! Sound chips from vintage computers, arcades and game consoles had *unique* sonic signatures that have been shadowed by recent and “better” technologies. Those *special techniques*, combined with each type of chip’s “*imperfections*” gave *true personality* to the music and sound effects of the 80s. (2020, emphasis added)

In description alone, *Plogue* entice their audiences with promises of simultaneous hypermediacy and transparent immediacy to anybody with a contemporary operating system and an Internet connection. *Plogue*'s descriptions of allowing the user to harness the very idiosyncratic ‘uniqueness,’ ‘special techniques,’ and the ‘imperfections’ that lend chiptune its unique sonic character are a magnet for seasoned chip-musicians and experimenting fans alike. At the same time, Chipsounds’ emphasis on ‘authentic’ and fine-tuned idiosyncratic capture of the 15 PSG mediations within its sound library then also enacts a form of transparent immediacy by way of erasing itself as an emulator.

*Plogue* go on to list further selling points of their product, which promise a host of features that are, even in description alone, emphatically remediatory. They oscillate between transparent immediacy, hypermediacy and, fundamentally, retain the ‘old’ within the improvements of the ‘new:’

Many chip emulators came out to please the growing demand for vintage sounds. But with *Plogue*'s Chipsounds, we reached a totally new summit of “*authenticity*” and *playability*. Say goodbye to all those badly aliased square waves, and welcome to “*purity*.” In order to be most *faithful* to each sound, we went with what was best for each type of chipsound. You can actually use a standard MIDI controller to start composing chipmusic. You DON'T need to deal with a small and hard to read interface. You DON'T need to learn assembly

language, or hexadecimal. You DON'T have to use a tracker, although it works fine with them as well. You can CHOOSE to be limited in terms of pitch and polyphony OR NOT. You DON'T need to spend years hunting garage sales, flea markets or online auctions to gather a collection such as this one. We have done it for you [...]. Consoles are not eternal, they were mass manufactured consumer goods and are bound to fail sooner or later. However there's NO risk of having a software have its capacitors dried up, its PCB rusted, and power supply catching fire. (2020, capitals in original, emphasis added)

Chipsounds emphatically promises immediacy through hypermediacy – to, as *Plogue* say, reproduce PSG mediations of 8-bit systems down to the finest of timbral details – and intertwines the constraints of PSG ‘authenticity’ with contemporary technological convenience. The fact that the user can choose between monophonic or polyphonic modes of playing, as well as expand the pitch range of each PSG also illustrates this. Chipsounds also offers a ‘wave sequencer’ option in which telephone chords and other forms of sequences/filter sweeps can be programmed. Even this feature expands on the capabilities of the original hardware. Unlike such tracker sequencers as ProTracker, which allowed the user to create a telephone chord using a maximum of three notes – the root note and two intervals above – Chipsounds’ wave sequencer function allows the user to create more expansive telephone chords and incorporate extended harmony.

*Plogue's* Chipsounds VST also offers the remedial ability to convert Amiga MOD files into MIDI controllable instruments. With a simple click and drag of the mouse, the user can drop an Amiga MOD file – whose musical secrets and ‘vibes’ were, at one time in history, confined to the magnetic tape and plastic of a floppy disk – into Chipsound’s conveniently windowed interface. The MOD file is then automatically unzipped, processed, and the sampler instruments within separately enter the user’s patch library, now ready for MIDI commands. In the spirit of the piracy that thrived in the Amiga cracktro and demoscenes, fans can in a sense ‘harvest’ the instruments and samples from Amiga titles and demo/music disks of their choice. The crunchy, fizzy guitar licks from David Whittaker, Tim and Lee Wright’s iconic soundtrack to the video game *Shadow of the Beast II*, notably featured in their ‘Game Over’ piece, become the fan’s own instruments to play without need of Amiga hardware or even learning tracker code (1990).<sup>81</sup> They might then attempt to recreate these classic tracks, or

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<sup>81</sup> Available here: <https://www.youtube.com/watch?v=PGf5xpaRIx8>

perhaps weave their mediatory ruptures into new extensions of the soundtrack and beyond into intertextuality.

Just as the smartphone remediates both the clarity and format of the DSLR and the aesthetics of the film camera while expanding on elements of both technologies, Chipsounds remediates the ruptures of 8-bit PSGs. As *Plogue* also emphasise in their marketing, Chipsounds' hypermediacy circumvents the issues of hardware, assembly/hexadecimal code, and offers the 'authentic' conjuration of PSG constraints in a format where they need never suffer the ravages of circuit decay or 'bit rot' (see Chapter 4 on hauntology, p. 129).

Some of Bolter and Grusin's discussions on remediation and visuals also apply to chip-synths and emulated tracker sequencers. Mu-synth's virtual chip-synthesizer 'Famisynt II' – a portmanteau of (Nintendo) 'Famicom' and 'synthesizer' – emulates the 8-bit chipsounds of the NES and incorporates MIDI functionality.<sup>82</sup> The visual interface of the chip-synth is itself set on a background of beige and burgundy, just like the plastic shell of the original Famicom's housing. The interface mimics the design of the Famicom/NES's controllers, including a series of 4-way directional pads, and a set of A and B buttons through which the user can operate the chip-synthesis parameters.

On a technical level, Famisynt II's visual aesthetics in no way impact the sound it mediates. For the user, however, the inclusion of such aesthetics can be considered as one of visual hypermediacy. This, in turn, enhances the immediacy of emulation offered by Famisynt II: helping to remind the user of the medium – the presence of PSG constraints – as well as *which* form of PSG constraints. The hypermediacy of Famisynt II, in other words, is enhanced further through the non-human agencies of visual cues, whose own mediations tap into the 'homes' of video game associations, memories, and culture. While not related to chiptune directly, similar examples can be seen throughout many examples of virtual synthesizers that emulate older models from the 1960s to the 1990s. Arturia's virtual recreation of the Moog Minimoog synthesizer, for instance, goes to great length to emulate the analogue mediation of the Minimoog's oscillators, filters, and signal path, and goes a step further to emulate the visual aesthetics of the synthesizer itself.<sup>83</sup> This extends right down to rendering the distinct wood effect finish that housed the original Minimoog. In tandem with the painstaking hypermediacy of emulated audio mediation, such visual hypermediacies can lend an extra degree of

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<sup>82</sup> Available here: <http://mu-station.chillout.jp/>

<sup>83</sup> Available here: <https://www.arturia.com/products/analog-classics/mini-v/overview>

‘authenticity,’ ‘warmth,’ and familiarity to what, beneath the surface, is just a networked series of codes and binary digits.

The tension between transparent immediacy and hypermediacy also operates through the ways in which many fans listen to chiptune by way of smartphones and online streaming. Chiptune fan Redacted is one such fan, and writes the following on the *Chipmusic.org* forums:

Yes I enjoy chiptunes. I got loads on my iPod that I listen to regularly. I’ve been listening to chiptunes since the Amiga and my love for it hasn’t faded one bit (see what I did there?). (2016)

As Redacted describes, their iPod is a key chip-musical technology in their chip-musicking practices; it becomes a remedial source to keep their love for chiptune from fading. Through their iPod, Redacted need not acquire the original PSG hardware to play their favourite chiptunes and, moreover, they can engage in chip-musicking wherever and whenever they are, provided they have their iPod with them. Used in this capacity, iPods, smartphones, and online streaming services enact transparent immediacy akin to that which Bolter and Grusin describe. While such devices still mediate the audio quality of the tracks they play – the volume, the track selection and positioning, and so on – their own interfaces partly erase themselves as fans press play, giving way to the hyper/immediacy of chip-musicking and its emergent ‘homecomings.’

Retrograde remediation is also a prominent strategy that underpins chip-musical practices. For PSG hardware to survive, capacitors and other parts of the decaying machines that house them are replaced, repaired, re-soldered and glued, and hacked beyond their original capacities. These acts, too, can be considered as a form of retrograde remediation. Predominantly, however, retrograde remediation takes place through the hacking of original PSG hardware and the incorporation of new chip-musical technologies into older ones.

The Game Boy, while not representative of all chiptune practices but arguably the most emblematic, is given a new lease of life beyond its commercial obsolescence through fannish practices of retrograde remediation. Catskull Electronics’ ‘Arduino Boy’ is a prominent example. The ‘Arduino Boy’ is a device that enables the connection of a Game Boy – once modified for this possibility – to a MIDI in/out port. Once installed, the Arduino Boy allows for the manipulation and sequencing of MIDI information via the Game Boy’s interface and, in turn, allows the user to play the Game Boy PSG’s oscillators. MIDI emerged in 1985 and persists to this day as an industry standard in musical computer language; the Arduino Boy

opens the Game Boy to new possibilities of control, inter-technological communication and, most importantly for the chiptune fan, new horizons of chip-musicking. Once more, it gives fans the means to ensure that the idiosyncrasies of the Game Boy PSG's mediation survive, while also expanding upon the capabilities of its obsolete interface to enhance its compatibility with contemporary music production techniques.

Paul Slocum's 'Synthcart' is another good example of retrograde remediation in chiptune.<sup>84</sup> The Synthcart is a custom-made chiptune addon designed for the Atari 2600 console, which is installed via the system's cartridge slot. As Slocum describes, the Synthcart transforms the Atari 2600 'into a basic synthesizer with an arpeggiator and built-in rhythm patterns. The controls are designed so that it is possible to use without a TV, allowing it to function as a stand-alone synthesizer' (2002). The PSG of the Atari 2600 – the TIA – is notoriously difficult to work with due to its bizarre tonal system and coding language. Carlsson rather colourfully describes the Atari 2600's tuning system as not unlike a pair of detuned pianos – one representing each of the Atari 2600's oscillators – with random keys missing (2010, p. 15). It is a hard to tame 'beast,' as chip-musician cTrix affectionately warns, even for the most seasoned of performers and hardware experts (cTrix 2015; see further in Chapter 5, pp. 163-76).<sup>85</sup> Slocum's Synthcart, however, performs several expansive remediatory functions, far beyond that of the original hardware's audio mediation capabilities, to aid the would-be chip-musician. They are as follows:

- Play an assortment of *familiar* Atari sounds
- Use two different sounds at a time, one assigned to each controller
- 8<sup>th</sup>, 16<sup>th</sup>, and 32<sup>nd</sup> note arpeggiator
- Beat Box with many pre-programmed beats and fills
- Play two beats simultaneously to create custom beats
- Two tremolo settings
- Four attack/release settings
- User interface designed so that a TV is not required.

(Slocum 2002, emphasis added)

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<sup>84</sup> Available at: <http://www.qotile.net/synth.html>

<sup>85</sup> cTrix describing his liking for the Atari 2600 TIA can be seen here: <https://chipmusic.org/forums/topic/3140/atari-2600-sound-chip/>

An example of the Synthcart in musical action will form the central case study of Chapter 5 (see pp. 163-76). For the time being, we can understand that through the retrograde remediation of the Synthcart, the Atari 2600 is given a new lease of chip-musical life as it becomes able to incorporate several features from contemporary musical technologies and compositional sensibilities into its original audio architecture, while retaining its own distinct mediatory and timbral character.

### ***2.2.2 Chip-musical technologies: the remediation is the message***

As Chapter 1 established, chiptune fandom is at ‘home’ in the music. We can now understand that the ‘home’ of chiptune is grounded by the hypermediacy of PSG constraints, and that the actor-networks which constitute these ‘homes’ – as social-musical realities – are engendered by the primary mediators of chip-musical technologies. Chip-musical technologies are then the agents of chiptune fandom: they are the consistently distinctive foundations of all forms of chip-musicking, which render musically playable and audible the sought-after qualities of PSG constraints and set the ‘homecoming’ process in motion. As Bolter and Grusin state on the relationship between identity and remediation:

As so many media critics have recognised, we see ourselves today in and through our available media. When we look at a traditional photograph or a perspective painting, we understand ourselves as the reconstituted station point of the artist or the photographer. When we watch a film or a television broadcast, we become the changing point of view of the camera [...]. This is not to say that our identity is fully determined by media, but rather that we employ media as vehicles for defining both personal and cultural identity. (2000, p. 231)

Remediation is not just about the conjuration of the old in the new, but also ties in with the ways in which we shape a sense of self through multimedia interaction. Remediation strategies, in this sense, can be considered as an important means through which we set the parameters of our musicking practices – through which we seek out and enact specific acts and technologies that remediate the sense of self we wish to affirm at the time by way of music. For chiptune fans, PSG constraints – whatever form they may take – are the sound of ‘home,’ and the ubiquitous use of the three remediation strategies identified in this chapter are the routes that fans choose to get ‘there.’ The way in which these choices are made bring us to the second

primary mediator that shapes the 'homecomings' of chiptune fandom: the human agency of chiptune fans.

# Chapter III

## Chiptune Capital and Chiptune Literacy

As shown in the preceding chapters, chiptune fandom is more than an enthusiasm for obsolete video game audio technology. Chiptune fandom is a bond, a personal attachment anchored by PSG constraints and upheld by their ongoing remediation. Networked together through PSG remediation, the musical interactions between fans and chiptune are where the magic happens – where the three primary mediators of chip-musical technologies, fannish devotion, and chipsound timbres musically play together. With the remedial agencies of chip-musical technologies established, we can now turn our attention to the fans that choose and play with them. This chapter identifies the agency of musicking fans within the inter-objectivity of chiptune actor-networks, and then explores the ways in which it mediates the ‘homecomings’ of chiptune fandom.

Section 3.1 begins by drawing attention to chiptune fan knowledge. Adapting the work of Pierre Bourdieu, I argue that this knowledge accumulates as a form of fan cultural capital in which technical details are intertwined with personal convictions. This section then contends that, as a form of fan cultural capital, chiptune fan knowledge fuels the agency with which fans mediate the ‘homecomings’ of their chiptune fandom. Building on this argument, sections 3.2 and 3.3 then explore how chiptune capital informs the mediatory agency of its possessor through the lens of media literacy. By identifying ‘chiptune literacy’ as the agency of human actors within chiptune actor-networks, this chapter concludes that fans mediate the ‘homecomings’ of their chiptune fandom through their sensibility in which aspects of chiptune they personally enjoy, as well as the competencies to seek out, recognise, and musically play with these qualities.

### 3.1 Chiptune Fans as Mediators

With the help of empirical data, we gain unique insights into how fans experience their interactions with chiptune through the intricate details they share about their personal tastes, and the chip-musical practices they enjoy. Fans readily divulge such details as favoured artists or bands, albums, songs, and uses of chiptune in video game soundtracks, often with reference to their influence. They also indicate their preferences in chiptune technologies and sounds in meticulous detail. These details, however, are not just revealed as a factual list of preferences



and practices. As fans detail their chiptune fandom, their technical knowledge fondly intertwines with the more meaningful aspects that animate their fandom.

It is no exaggeration to claim that chiptune fans, like all music and media devotees are well-versed in their fandom and possess the relevant knowledge to inform this familiarity. Chiptune fans clearly know what constitutes their personal fandom in terms of chipsounds and technologies, values and tastes, personal attachments, and communities. We might be tempted to take for granted that they are well-informed in what they like, why they like it, and where and how they can interact with it. What is importantly revealed by this data, however, is an entry point into exploring the ways in which chiptune fans mediate the ‘homecomings’ of their fandom. Not only does empirical data reveal what kinds of knowledge fans possess in their chiptune fandom and senses of self, but it then also leads us to consider what this knowledge might enable a chiptune fan to *do*. To introduce the relationship between chiptune fan knowledge and mediatory agency, the following subsections outline and adapt the notion that media fans possess forms of what Pierre Bourdieu termed ‘cultural capital.’

### ***3.1.1 Bourdieu and fandom***

Cultural capital stems from Bourdieu’s seminal 1984 publication: *Distinction: A Social Critique of the Judgement of Taste*. In this comprehensive sociological work, Bourdieu contends that status within a cultural hierarchy – social class in particular – is partly bestowed through the factor of taste (1984, pp. 80-4, 114). For these distinctions to take place – to attain one’s status and privileges within a cultural hierarchy – taste must be judged. And for taste to be judged, it must be displayed – often habitually – to the relevant beholder(s) who, judging the display, will ideally bestow the desired distinction of ‘good taste’ or ‘high class’ (*Ibid.*, p. 47). In turn, Bourdieu explains, such distinctions may procure access to social prestige and mobility among the competitive factions of bourgeoisie classes, as well as economic and academic privileges.

Bourdieu contends that the ability to display taste, and thereby attain status, is informed by the accumulation of assets he defines as forms of ‘capital:’ ‘[sets] of actually usable resources and powers’ (*Ibid.*, p. 114). They are: ‘social capital’ (who an individual knows within a particular culture), ‘economic capital’ (how an individual might fare in financial assets), and ‘cultural capital’ (what an individual knows about important or ‘high’ aspects of culture) (*Ibid.*, Parts II and III, pp. 115-20, 125, 266). These kinds of capital – at times transferable, intersecting and working together, and even clashing – become resources that guide the ways in which displays of taste might take place (*Ibid.*, pp. 32, 88).

Discussing cultural capital in particular, Bourdieu contends that its constituent knowledge on taste is primarily instilled through an individual's upbringing and education, and that it informs three kinds of display: objectified, embodied, and institutionalised (*Ibid.*, p. 27; Bourdieu 1986, p. 17). Good taste, for instance, can be objectified through goods and home furnishings.<sup>86</sup> Embodied forms of display, Bourdieu writes, emanate from our dispositions: both mind and body (*Ibid.*).<sup>87</sup> Institutionalised forms of display, finally, are also typically object-orientated but can include possessing academic qualifications, property rights, or a professional or noble title (Bourdieu 1986, pp. 16-7).<sup>88</sup> According to Bourdieu's Marxist logic, the more capital an individual possesses and continues to accrue, the greater their power to gain status and distinguish themselves *from* others and their – often deemed lesser – positions within cultural hierarchies (cf. 1986, pp. 19-26).

In the decades since its publication, Bourdieu has had an enduring influence on fan and (sub)cultural studies. Among the first to adapt his framework was John Fiske in his 1992 piece: *The Cultural Economy of Fandom*. Fiske sets out to develop Bourdieu's model of investment and begins by distinguishing between 'official culture' (which is socially and institutionally deemed as legitimate) and 'popular culture' (which is not) (1992, pp. 30-1).<sup>89</sup> Through this distinction, he defines 'official cultural capital' and 'popular cultural capital' (or 'fan cultural capital') (*Ibid.*, pp. 31-4, 40).

In contrast with official cultural capital – whose display is said to yield the desired ascension within the strata of 'one's betters' – Fiske contends that the merits of popular cultural capital lie in the 'pleasures and esteem of one's peers in a community of taste' (*Ibid.*, p. 34; cf.

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<sup>86</sup> Choices made in wallpaper, the art adorning the walls, upholstery styles, or perhaps the calculated display of 'high cultural' literary works on a bookshelf, antiques, and bespoke furniture are all means through which good taste can be displayed and judged.

<sup>87</sup> Knowing how to communicate within social groups, our vocalisation of preferences, distinctions, judgements, our languages, our mannerisms and gestural performativity, are all means through which cultural capital can become embodied (Bourdieu 1984, pp. 17-8). Accents, for instance, are highlighted by Bourdieu as a notable distinguisher of class, though this has been subject to critique in the years since (*Ibid.*, pp. 190, 438, 437).

<sup>88</sup> Cultural capital might therefore include knowledge of *what* kinds of objects are culturally significant, or tasteful, and where to display them, *how* to display etiquette within particular social circles, or perhaps *which* kinds of academic qualifications or professional/noble titles matter. And as such, not only does cultural capital inform the display of taste, but it can also enable the possessor to judge the displays of others – often resulting in the formation of social groupings within the hierarchies of class structures.

<sup>89</sup> Here, Fiske offers two critiques of Bourdieu's model. First, through Bourdieu's almost exclusive focus on economy and class, he omits the dimensions of age, gender, race, and sexuality in the processes of distinction (1992, p. 32). Second, Fiske claims that Bourdieu, through his focus on the competitive subdivisions within the bourgeoisie, disregards proletarian culture as an 'undistinguished homogeneity' unable to distinguish itself through its own forms of cultural capital, and thereby underestimates the creativity of popular culture (*Ibid.*).

Chin 2018, p. 250).<sup>90</sup> Popular cultural capital, as Fiske theorises it, thus enables fans to accrue status *within* their own communities – to distinguish themselves *as* fans.

Attempting to tie together the relationship between popular cultural capital and its displays, Fiske then loosely draws upon Bourdieu's notion of 'habitus:' our acquired dispositions that unconsciously activate and shape the trajectories of our actions (Bourdieu 1984, pp. 169-75; Fiske 1992, pp. 32-6; Prior 2013, p. 184, cf. Hills 2002, p. 51). From here, three perspectives are outlined to describe the ways in which cultural capital becomes mobilised and displayed through fannish behaviours. The first is 'distinction and discrimination,' through which fans set and debate the boundaries of their fandom (Fiske 1992, pp. 34-37). The second is productivity and participation, which involves semiotic productivity (individualised meaning making), enunciative productivity (engaging in fan discourse to circulate meanings), textual productivity (fan creativity), and collective participation in meaning making in the consumption of a text (*Ibid.*, pp. 37-42). The third dimension, capital accumulation, describes the ways in which fans will often competitively accrue specialist knowledge or items – such as 'unique' and 'authentic' collectables and memorabilia – to enhance their potential to gain privileges within a fan culture (*Ibid.*, pp. 42-5). Following Bourdieu's logic, Fiske contends that gains or losses in popular cultural capital will alter the habitus of the fan and, thereby, their status (*Ibid.*, p. 33).

After Fiske, Sarah Thornton's 1995 publication *Club Cultures* is also notable for its adaptation of Bourdieu. Using cultural capital as a conceptual basis, Thornton coins 'subcultural capital,' which can be broadly defined as a participant's knowledge of their subcultural connections and the values held by these communities (Thornton 1995, pp. 25-9). Similar to Fiske's notion of 'popular cultural capital,' a participant's knowledge of their subcultural bonds is also developed without a primary reliance on the formalities and routines of education (cf. Bourdieu 1984, pp. 18, 27, 319-20).<sup>91</sup> Tastes in music and media, venues for club nights, fashions in clothing and hair, slang, and dance moves are all acknowledged by Thornton as important areas of knowledge in the context of her sociological study of club subcultures (1995, pp. 27, 154-9).

Following Bourdieu, although without the emphasis on class and economy, Thornton observes how subcultural capital grants its possessor prestige among their subcultural circles.

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<sup>90</sup> Fiske does acknowledge, however, that there are exceptions in which popular cultural capital can convert into economic capital (see 1992, p. 34).

<sup>91</sup> This knowledge is defined by Thornton as 'extra-curricular,' as the 'likes and dislikes, meanings and values of the culture' are typically gained through socialisation with other subcultural participants outside the classroom (Thornton 1995, pp. 15, 25, 29).

According to Thornton, within club subcultures social prestige is divorced from the hierarchies of social class and distinguished through what she terms ‘hipness’ (*Ibid.*, pp. 3, 15, 17-27, 29, 188, 243). Similar to Fiske’s adaptation of Bourdieu, to be distinguished as ‘hip’ is to be approved by, and identify with, one’s subcultural peers, and therefore gain access to the ‘insider’ benefits of such a position; hipness is the validation of somebody as ‘in the know’ of club subculture, differentiated from other social groups and perceived as ‘authentic’ in comparison to the ‘derivative mainstream’ (*Ibid.* pp. 11, 15, 19, 24; cf. Fiske 1992, p. 43). As such, to procure such an ideal as hipness, an individual’s subcultural capital also follow’s Bourdieu’s logic in that it must be displayed to the ‘relevant beholder:’ to be recognised, judged, and affirmed by other – ideally, also ‘in the know’ – members of club subculture (Thornton 1995, p. 27; cf. Bennett 2001, pp. 127, 130, 171).

Thornton thus also explores the ways in which subcultural capital can be both objectified and embodied (1995, p. 14-5, 27).<sup>92</sup> Physical objects that display subcultural capital might consist of relevant styles and possessions. For instance, through clothing or specialist collection of vinyl records and, moreover, wearing the ‘right’ clothing or owning records innkeeping with subcultural aesthetics and standards of taste and ‘authenticity’ (Thornton 1995, pp. 11, 15, 20, 27; see Shuker 2014, pp. 167-82). Through the more embodied gestural forms of its display, the possessor of subcultural capital will prove to others that they are ‘authentically’ ‘in the know’ through such methods as correct and convincing use of slang, or styles of dance (Thornton 1995, pp. 14, 26-7, 212). Hipness however, as Thornton emphasises, not only must be earned but, as her findings also imply, routinely maintained.

As Hills highlights in *Fan Cultures*, Bourdieu provides a lens through which we can understand fan cultures not only as communities but as hierarchies, in which fans play with ‘social rules,’ and where fan status and ‘access to the object of fandom’ is competitively distinguished through the development of fan knowledge, skills, and social connections (2002, p. 46; cf. Duffett 2013, p. 130). This usage of Bourdieu’s work – in addition to the insights of Fiske and Thornton – has remained a staple in many studies of fandom up to the present. *All* fandoms both individually and collectively establish boundaries and notions surrounding such qualities as ‘authenticity’ (Geraghty 2018, p. 214). And very often fans contest these aspects – at times with varying degrees of hostility – as they attempt to align themselves with specific social groupings and distinguish themselves as more ‘in the know,’ or worthy (*Ibid.*; Zubernis

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<sup>92</sup> As subcultural capital is ‘extra-curricular’ in its development – theorised as gained outside systems of education – Thornton does not mention institutionalised forms of display.

and Larsen 2012, p. 13; Duffett 2013, pp. 130-4). It is an individual's fan cultural capital – their repertoire of fannish knowledge detailing such things as boundaries, notions of 'authenticity,' canon, taste, and so on – that partly drives the performativity and skill with which they display, consume, and distinguish what *matters* to them as well as discriminate what does not (Duffett 2013, p. 130; Chin 2018, pp. 244-6; cf. Sandvoss 2005, p. 33-4, 39-40).

While Bourdieu's framework, along with Fiske and Thornton's adaptations, yield useful insights in this area of study, they share problematic aspects. These are importantly raised by Hills – among others – and are useful to bear in mind when attempting to analyse fan behaviours and hierarchies through the concept of fan/(sub) cultural capital. For a start, the works of Bourdieu, Fiske, and Thornton each construct problematic binaries and moral dualisms in their analyses (2002, pp. 46–64). Fiske constructs a moral and essentialist dualism by splitting bad 'official' culture and good 'popular' (or fan) culture, which follows Bourdieu's economic model by treating popular culture – and thereby fan productivity – as a fixed 'scandalous category:' functioning in binary opposition to the established 'norms' of 'official' culture and media producers through their own 'improper' appropriations (Jenkins 2013, pp. 15-6; Hills 2002, pp. 48-52; see also Sandvoss 2005 pp. 32-43). Through this dualism, fandom is problematically represented as operating with a functional 'purity' against, and even autonomously from, 'official' culture (cf. Hills 2002, pp. 50-2, 62, 168; cf. Duffett 2013, pp. 132-4).

Although Thornton critiques the class binaries depicted in previous subcultural works – following criticisms levelled at the CCCS – her work posits a similar moral dualism between the 'authentic insiders' of club subculture (with good taste), and the 'outsiders' (with bad taste) who comparatively lack the knowledge required to be 'in the know' (Hills 2002, p. 53; cf. Chin 2018, p. 253). As Hills points out, such monolithic and homogeneous binaries and dualisms fail to account for the complexities of fandoms and subcultures – for instance, they obfuscate the hierarchical shifts that take place *within* these communities as well as the varying fluidity of fan identity (2002, pp. 48-9, 55, 63).<sup>93</sup> Another issue with this framing is that it portrays fans as calculating and rational in relation to their interests and behaviours, and thereby cannot address the complexities of 'non-calculative' moments of fannish subjectivity – such as a fan's entry into a fan culture (*Ibid.*, pp. 55, 58; Duffett 2013, p. 132).

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<sup>93</sup> Hills also contends that the construction of these moral dualisms by Fiske and Thornton are the result of their imagined subjectivity (Hills 2002, pp. 53-5, 63; see introduction, p. 39).

Hills also critiques the singular focus on cultural capital, arguing that other forms of capital are at play in fannish behaviours and fan status. In addition to fan cultural capital, Hills suggests that ‘fan social capital’ and ‘fan symbolic capital’ also play a prominent role. The former refers to a fan’s ‘network of fan friends and acquaintances [...], *as well as* their access to media producers and professional personal linked to the object of fandom;’ the latter refers to how well known a fan is among their community, and how well respected they are or how ‘legitimate’ their cultural authority is perceived to be (2002, pp. 57-8, emphasis in original; see also MacDonald 1998, pp. 138-9). As Hills points out, while these forms of fan capital feed into one another – for example, a fan with a high amount of cultural capital might then also accrue high levels of fan social and symbolic capital – there is no predictability to their relationship (*Ibid.*, p. 57). Some fans do not participate in the communal or more ‘organised’ aspects of their fan cultures, and thereby social and symbolic capital do not play such a large role in their subjectivity (*Ibid.*).

Fan studies in recent years have continued to develop these critiques. Beate Peter’s 2014 exploration of electronic dance music (EDM) fandom, for instance, attempts to move away from Bourdieu’s theoretical touchstone. Peter emphasises that Bourdieu’s model is essentially ‘modernist in that it attempts to trace one grand narrative of social structure’ (2014, p. 39).<sup>94</sup> To overcome such pitfalls, Peter contends that we can understand EDM fan cultures – and all fan cultures by extension – as ‘postliberal aggregates,’ which possess their own internal logics and hierarchies that elude Bourdieu’s portrayal of class and taste (*Ibid.*, pp. 38-41; see Papadopoulos, Stephenson, and Tsianos 2008). By approaching fan communities in this light, Peter emphasises the fluidity of fan groupings and their hierarchies. And echoing Andrea Macdonald’s point fans are not always actively aware of the hierarchies present within their communities, she also accounts for the non-calculative aspects of fan behaviour that both Hills and Duffett emphasise (Peter 2014, p. 47; MacDonald 1998, p. 136; cf. Hills 2002, p. 57).

Fannish motivations and behaviours, Peter highlights, are not always driven by the search for peer approval and discrimination, nor are fans constantly aware of how their behaviours will impact their social standing; there are other factors at work (2014, pp. 47-9, 51). Through her exploration of EDM fandom she argues that such activities as dancing does not simply reflect the habitus of participants; dancing is cultivated in the passions and ‘vibes’

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<sup>94</sup> While raising similar issues as Hills – and those who critiqued the focus of the CCCS on purely class-based struggles and dichotomies of taste – Peter does recognise that some (music) fans do appropriate cultural aspects in the ways that Fiske depicts. As an example, she discusses the symbolic reappropriation of the figure of Satan by some metal music fans – or ‘metalheadz’ – in opposition to its Christian context (Peter 2014, p. 38).

of musical immersion, these intensities are imprinted within fans' nervous systems to emerge again or undergo subsequent transformation (*Ibid.*, pp. 45-7; cf. Lancaster and Mikotowicz 2001, p. 4). Peter also argues that there are aspects of 'personal myth' at work in this process: the personal and communal narratives that arise around EDM fan experiences, which thereafter feed into subsequent convictions, motivations, and interpretations (Peter 2014, p. 48; cf. Campbell 1986, p. 61). We can understand, then, that Peter's approach to fan capital not only calls for the consideration of fluidity and heterogeneity, but also the consideration of its more personal, subjective and intensive – or affective – dimensions (see Ashwood and Bell 2016).

Another notable work to build on the concept of fan capital is Bertha Chin's *It's About Who You Know: Social Capital, Hierarchies and Fandom* (2018). Chin develops Hills' consideration of social and symbolic capital in the analyses of fan hierarchies, observing the ways in which both – in addition to fan cultural capital – function in the digital age of social media (*Ibid.*, pp. 243-6). She argues that the fannish use of such sites as *Twitter* and *Tumblr* are 'driven by presence and influence;' they allow for fans to both accrue and display social/symbolic capital through their online outreach, as attaining numbers of likes and retweets/reposts might gain attention from a celebrity or media industry professional (*Ibid.*, pp. 244, 247).

Building on previous critiques of Bourdieu's work and its fan studies adaptations, Chin illuminates further points of consideration. As Chin states: '[while] notions of status and hierarchy are important for fans, it is important to remember that fandom is not homogeneous, and one observation of hierarchical relationship is not representative of the entire fandom' (*Ibid.*, p. 244). Unlike Bourdieu's tracing of an overarching social hierarchy – and the subsequent dichotomies conveyed by Fiske and Thornton – Chin draws attention to the fact that fandoms contain multiple potential hierarchical positions, many of which fans might occupy simultaneously (*Ibid.*, p. 249; cf. MacDonald 1998, p. 136, 138-9). It is therefore analytically impossible to account for *all* potential hierarchies that may emerge within a fan culture, and it would be problematic to do so regardless (Chin 2018, p. 249). Moreover, the positions fans occupy within their fandom are never fixed, they perpetually shift over time and are continuously contested by other fans (*Ibid.*, pp. 248-9).

Echoing Hills once more, Chin also contends that some prior studies have theorised fan cultural capital rather deterministically. As Chin concludes, capital 'governs the success of agents within a given field' (*Ibid.*, p. 253). But as she stresses, the possession of fan cultural capital does not automatically bestow the possessor with social and symbolic capital, and

desired hierarchical status (*Ibid.*, p. 249). And like Peter's work on EDM fandom, Chin also contends that fan cultural capital does not motivate entirely predictable fan behaviours.

We could therefore argue that both Peter and Chin identify an essential tension operating in the processes of fan capital. Fandom is heterogeneous and operates 'rhizomatically,' as Chin states, with fan positions continuously shifting through subsequent and unpredictable interactions and 'struggles' (*Ibid.*, pp. 244-5, 249, 253).<sup>95</sup> Yet, what we might consider to be the agencies of fan capitals do engender multiple and simultaneous positions of relative stability, hierarchical structure and strata among fan groupings – even if only fleetingly (*Ibid.*, pp. 244, 285).

Similar adaptations and critiques of Bourdieu have also remained a staple within the research field of popular music cultures, many of which are predominantly interested in the sociology of musical taste and consumption, and its relevance to identity (see Bennett 2001, pp. 127, 130, 171; Frota 2006; Johnson et. al. 2007; Hogarty 2017, Pp. 12, 105, 108-9, 114, 129). Frith's *Performing Rites* is a particularly notable early study (1996). Frith states that 'to be engaged in popular music is to be discriminating,' and that the aesthetic evaluation and articulation of our musical experiences are an integral part of our desire to both share our musical tastes with like-minded others, and distance ourselves from that which we dislike (*Ibid.*, p. 4). For instance, we often exclaim what we musically like and dislike, and agree or dispute the value of certain musical genres and bands in terms of how they impact our lives – all of which are key aspects of fannish 'homecoming' articulations and discourse (cf. Prior 2013, pp. 181-2, 185; cf. DeNora 2000, pp. 51-3; see also Bennet et al. 2009). Critical of Bourdieu, Frith therefore argues that tastes in popular music are not just expressions or reflections of class positions, gender, or sub/culture, but they potentially 'shape [...] disrupt, extend and strengthen these sources of identification' (Prior 2013, p. 185).

DeNora's work on musical identification in everyday life also considers the factor of taste but raises an issue which, partly, influenced the approach to chiptune developed in this thesis. DeNora calls for a shift from a more general sociological approach to musical taste – wherein tastes are categorised, matched and contrasted in the definition of different social groupings – and towards a focus on people doing things *with* music (2000, p. 8). As such, she

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<sup>95</sup> The 'rhizome' is a philosophical concept developed by Giles Deleuze and Felix Guattari in *A Thousand Plateaus*, and it describes the multiple and interconnected nature of ideas (2014, pp. 2-14, 25). Unlike a tree, whose arboreal structure is firmly rooted and develops teleologically, rhizomes are unstructured but interconnected networks – sprawling unpredictably in a flow of heterogeneity and potentially infinite non/human connections. Hence, to describe the use of social media as 'rhizomatic' would refer to the unpredictable nature of both the frequency with which it is used, and the potential interactions and connections that take place through its use.



also indirectly identifies a similar essential tension to both Peter's and Chin's analyses. An individual's anchors of musical taste, notions of who they are and where they belong, and the knowledge of how they relate to one another are, of course, paramount to the shaping of their identities. But it is necessary to consider how music dynamically acts with and upon these tastes and desires, how it conjures and modulates memories and emotional states, and 'equips identities' (cf. DeNora 2004, p. 217). In addition, we must also account for the musical activation of this knowledge, and how it potentially shifts over time.

This tension is also raised in Nick Prior's reflections on Bourdieu and musical consumption (2013). Like many of the critiques cited in this subsection, Prior also stresses the importance of musical taste – as cultural capital – in the processes of identity and community. Yet tastes, and the 'musical habitus' they inform, are undergoing constant 'redefinition, mutation, and expansion' (*Ibid.*, pp. 182, 184). The main reflection of Prior's article is whether Bourdieu's notion of capital is sophisticated enough for the analysis of contemporary musicality, and whether it can be adapted to the context of musical interaction (*Ibid.*, p. 183; see Toynbee 2000, p. 40). One of the biggest concerns here is technology. Specifically, the ways in which the digitisation of music has altered both displays of and shifts within cultural capital, as well as how musical creativity relates to this framework (Prior 2013, pp. 184-9). As Prior highlights, the proliferation of new musical technologies and streaming services have afforded greater accessibility and have blurred genre categories, thereby resulting in contemporary consumers possessing more 'omnivorous' musical tastes (*Ibid.*). As Chin's work also highlights, we can see the importance of considering how technological – and thereby non-human – agencies can enhance and modulate cultural capital, as well as the importance of accounting for the potential multiplicity of an individual's tastes (cf. Chin 2018, pp. 245-9).

Drawing on DeNora and Hennion, in Prior's reflections the subjective and interactional dimensions of cultural capital are emphasised (2013, pp. 109-10). Echoing Small's work on musicking, taste is argued not to be an inherent property, or the result of 'an external mechanism of distinction,' but the result of activity (*Ibid.*). As put by Antoine Hennion, taste emerges through the 'stirring of bodies,' the materials of musical performance – as music exchanges its properties with us in the shaping of our listening experiences (2008, pp. 44-8). The challenge Prior outlines is thus to understand how the cultural capital of our musical tastes not only feeds *into* musicking as it unfolds, but also how music, in turn, can *produce*, enhance, diminish, or mutate these values and narratives.

### ***3.1.2 Chiptune Capital***

As I have emphasised thus far, chiptune is not homogeneous. Nor, considering the critiques outlined in the previous subsection, are its fans entirely in opposition to a supposed ‘dominant culture’ because of their homogenised class status, as McLaren infamously tried to portray through the anti-capitalist romanticisation of their technological appropriations (2003; see Introduction, p. 38). However, fan cultural, social, symbolic, and even economic capital can all be observed operating together in chiptune fan communities. Moreover, the very same essential tension identified in Chin’s work – the tension between rhizomatic fan aggregates and their use of social media and musical technologies, and the semi-stability of multiple fan positions – also applies.

In encounters both on and offline, and as evident in my empirical findings, fans clearly show that they are all, in varying degrees, ‘in the know’ of their affiliations with chiptune and the ways in which it is intertwined with their sense of identity. And online platforms from *Twitter*, to *Reddit*, to more specialist forums and dedicated chiptune spaces, have accelerated the ways in which the displays of this knowledge – as capital – emerges through fan discourse. As I emphasised through Chapter 1’s empirical data, many fans discuss the factor of a like-minded community as a key part of chiptune’s attraction. Such fannish connections – or what we can now consider as social capital – build rhizomatically on innumerable macro and micro scales. Both lifelong friends and brief acquaintances are made through the shared love of chiptune in general, or perhaps the passionate appreciation of specific PSG idiosyncrasies. I should point out here, however, that not all chiptune fans are fully engaged in fan meetings, concert attendance, and online discussions (cf. Hills 2002, p. 57).

Some fans are just happy to share their love for bleeps and lovingly cheap beats with one another; others, however, can be a little more assertive in the display of their tastes. Perhaps the most notable example of this, and one that occurs both on and offline, is a mainstay topic of chiptune fan discourse and academic analyses: ‘authenticity.’ Survey participant 67 rightly identifies that the discourse on ‘authenticity’ has shifted rapidly among chiptune fans and continues to do so (age category 19-25, see appendix, p. 229; Polymeropoulou 2014). As they also contend, the chiptune communities they frequent are very aware of pressing social issues and are supportive without being condescending. Both are certainly true in many instances, and I can testify to this through my own positive experiences among chiptune fan communities. As with any fandom, however, there are instances where fan cultural capital on the subject of ‘authenticity’ has been used in a more discriminatory and even hostile manner.

Many good examples are captured in the fieldwork of Polymeropoulou (2014). Specifically looking to gain insights into opinions on fake-bit, Polymeropoulou interviews a variety of chiptune fans across different generations. One fan, a chiptune event organiser belonging to what Polymeropoulou identifies as the first generation of chiptune participants – the demosceners – claims that fake-bit is the reason he decided to quit chiptune altogether (*Ibid.*). He explains to Polymeropoulou that the chiptune scene has substantially decayed since the Internet brought it to ‘mainstream’ attention and to the ears of an ‘uninformed’ audience (*Ibid.*). Through this decay, he claims that chiptune has become ‘a bricolage of commercialised retro sound elements reminiscing video games’ in an effort to reach a broader demographic (*Ibid.*). For this fan, the question of fake-bit, hardware, and ‘authenticity’ is indisputable. As he concludes: ‘it is impossible to conceptualise chiptune without the actual hardware; it would be like performing folk music without any folk musical instruments’ (*Ibid.*).

Although Polymeropoulou does not use the lens of fan capital to analyse her findings, the response from the event organiser is a display of fan cultural capital *par excellence*. His distinction between hardware-based chiptune as ‘authentic’ and fake-bit as its antithesis – and especially, the discrimination between demosceners and ‘less informed’ audiences – echoes the ‘insider’ and ‘outsider’ distinctions and othering that Thornton describes in relation to club subcultures. Through his wording, the event organiser distinguishes himself as ‘in the know’ of chiptune ‘authenticity,’ part of an ‘informed’ audience, and gate-keeps the now mythologised craft of hardware PSG musicianship that – as he implies – is a heritage fading in the wake of greater popularity and accessibility via remediation.

Polymeropoulou is careful to point out that while she distinguishes between different generations of chiptune fans, each is far from homogeneous in their views on fake-bit (2014). Yet, while some chiptune fans consider hardware PSGs ‘authentic,’ and others consider ‘authenticity’ to be a trivial matter, such distinctions do form aggregates – or social ‘groupings,’ as named in Polymeropoulou’s work – based on the sharing of these opinions (*Ibid.*). We could then understand that, in this instance, fan cultural capital on the subject of chiptune ‘authenticity’ partly feeds into the semi-consistent distinctiveness of taste among these groupings and, on a broader scale, even between the generational shifts that Polymeropoulou documents. Thus, we can also consider the ways in which fan cultural capital in chiptune ‘authenticity’ also engenders shifts in social capital, and even symbolic capital as

chiptune fans privileged enough to own original PSG hardware – a form of objectified cultural capital – often promote their albums on this ‘authentic’ premise.<sup>96</sup>

Original chiptune hardware has risen drastically in price due to both its increasing rarity and the renewed interest in retro/obsolete (music) technologies in recent years (cf. Reynolds 2011, pp. xxv-3; cf. Hogarty 2017, p. 12). Tracker sequencers and chip-synths remain free, freely downloadable chiptune sample packs are locatable through a quick *Google* search, and tutorials on *YouTube* and *Reddit* for the budding chipmusician to learn how to code, circuit bend, and craft patches in soft synths that mimic the voices of classic PSGs are abundant. Yet Commodore 64s and Amigas, Atari STs, Gameboys, and typically any other form of original chiptune hardware now fetch high prices on both auction sites, and sites that sell them reconditioned. For some chiptune fans to sneer at fake-bit in favour of the ‘authenticity’ of original PSG hardware – somewhat ironic considering that fake-bit and free tracker sequencers are in-keeping with the spirit of chiptune’s lovingly cheap ethos and origins in piracy – also reveals how economic capital can play a discriminatory role amongst chiptune fan communities.

While the lens of fan capital can enhance the analyses of chiptune fan discourse, the ways in which chiptune fans interact with one another, and the resulting shifts within their communities, how, then, does the concept help us to approach chiptune fans as mediators of ‘homecoming’ qualities? To begin, I would like to focus on fan cultural capital in this context, which I will now refer to as ‘chiptune capital.’ Why fan cultural capital in particular? Because while social, symbolic, and even economic capital undoubtedly play a role in chiptune fan identity, I argue that a fan’s own understanding of their identity primarily formulates within their fan cultural capital, strung together across the knowledge repertoires of chiptune’s personal aspects, values, and tastes. Chiptune capital is something that every chiptune fan can be understood to possess in varying degrees, regardless of the extent to which social, symbolic, and economic capital shape their identities.

My approach to chiptune capital in this thesis also builds on both Prior’s and Hennion’s work in that it enhances the lens of (fan) cultural capital through ANT. We can apply ANT to Thornton’s notion of hipness, for instance. Thornton does not use ANT to analyse the distinction of hipness. With ANT in mind, however, there is a notable parallel between the

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<sup>96</sup> See ‘CyberChip’ by chipmusician LukHash, for instance, which boasts ‘carefully crafted’ arrangements recoded using a *real* Commodore 64 SID: <https://lukhash.bandcamp.com/album/cyberchip>

‘homecoming’ of chiptune fan identifications and the affirmation of hipness: both are channelled through social (and in this case musical) interactions.

As established in Chapter 1, chiptune fans engage in musicking with the non-human and non/musical actors of chip-musical technologies and their timbral transmissions for the ‘homecomings’ of their fandom to take place. The affirmation of hipness also requires social interactions. In fact, interactions between human *and non-human* actors are integral to the displays of subcultural capital within any subculture: in club culture specifically, such non-human actors as hairspray, makeup, and clothes interact with human dancers to mediate the performance of hipness; for chiptune fandom, social-musical interactions between the primary mediators of chip-musical technologies, fans, and chipsound timbres mediate the ‘homecomings’ of fannish identifications. All non/human actors involved in the display of subcultural capital impose their unique agencies on the process, each mediate the performance of hipness, and *all* converge to form its perception. The display of subcultural capital, therefore, is a process of non/human mediation, and ‘hipness’ – in the case of dance moves specifically – can be understood as a social-musical reality.

If hipness is an ambition of youth and club participants, as Thornton identifies, then subcultural capital – knowledge of what is or is not ‘hip’ – *guides* the ways in which its possessor might inter/act with other non/humans to ensure their portrayal of ‘in the know,’ informing the display of hipness as well as its reception. Thinking through Latour’s perspective, subcultural capital – as strands of knowledge on subcultural tastes and attachments – can then be understood to function as an actant: an abstract, but nonetheless *active*, driving force in the affirmation of hipness and a mediator of its performance and perception (Latour 2005, pp. 53-5, 71; Chapter 1, p. 65).

In the context of Thornton’s work on club cultures, the actant of subcultural capital might inform how its possessor interacts with the music in the club and how they might dance to it, with the products through which they style and colour their hair, or with the clothes and makeup that might present them as ‘in the know.’ Subcultural capital might then also inform how its possessor seeks out commodities of subcultural taste in the first place, or the efforts made to ensure their displays of hipness are recognised as ‘authentic.’<sup>97</sup> We can then understand that the actant of subcultural capital feeds into the agency of the possessor to mediate their hipness (cf. Latour 2005, p. 52).

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<sup>97</sup> For instance: frequenting hairstylists that might cater to a particular look, select clothing boutiques that tailor to exclusive attire, or perhaps through observing the moves of other dancers, gleaning their music tastes, and picking up their slang in the lull of a nightclub smoking area.

However, unlike the Bourdieusian treatment of hipness and subcultural capital in Thornton's work, among many others, the theorisation of chiptune capital in this thesis does not focus on the ways in which being 'in the know' – of chiptune 'authenticity,' for instance – is dialectically recognised by other chiptune fans as 'relevant beholders' (cf. Thornton 1995, p. 27). Nor do I wish to trace the hierarchical aspects of chiptune fandom as, to echo Chin, while social strata form among any fan community, not only are such positions potentially innumerable but also constantly and rhizomatically shifting (cf. 2018, pp. 244-9). As discussed above with reference to Polymeropoulou's work, these aspects of fan discourse, community, and status are aptly captured in prior sociological studies of chiptune (2014; see also McAlpine 2018).

Instead of exploring the sociology of chiptune capital, I want to draw attention to how its constituent knowledge – values, tastes, personal affiliations, and so on – feeds *into* social-musical processes, and guides musical inter/actions between fans and the other primary mediators of chiptune (cf. Prior 2013, pp. 188-9). Specifically, I want to argue that it is the actant of chiptune capital which bestows its possessor with the agency to mediate the 'homecomings' of their chiptune fandom. Chiptune fans as individual, human mediators of musical actor-networks are thereby the focal point here, not the broader scales of their communal groupings and recognition.

With the relationship between chiptune and fan identity in mind, the analytical interest of this theorisation is the relationship between chiptune capital and the *subjective* dimensions of chiptune's 'homecomings' – the fan's perception and use of chiptune in relation to their own senses of taste and identity – rather than as something judged by the standards of other fans. And as such, this more atomised approach aims to bridge the transition between a chiptune fan's own understanding of their identity, and the non/human chip-musical interactions that channel this understanding into a musical *event* (see further in Chapter 5, p. 152).<sup>98</sup> The actant of chiptune capital, in other words, constitutes the 'internal' forces in the relational ontology of chiptune fan identity and its ludomusical shaping, partly informing its relative stability (see Introduction, p. 22).

Following the works outlined in the previous subsection, such a theorisation requires the achievement of three goals. First, to identify the kinds of knowledge that constitute the actant of chiptune capital in a way that accounts for the heterogeneity of chiptune fans, and the

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<sup>98</sup> In Chapter 6, chiptune capital is further explored as a factor in the longevity of chiptune fan identity (see p. 199).

multiplicity, interconnectivity, and fluidity of their knowledge (cf. Hills 2002, pp. 48-9, 55; cf. Prior 2013, pp. 182, 184) Following the work of Peter, this theorisation should also consider the more personal and intensive aspects of chiptune fan experiences (cf. 2014, pp. 47-9, 51). For instance, two different chiptune fans can possess the same kinds of knowledge (as capital). Yet, for each fan, there are personal factors that differentiate the importance of this knowledge in relation to their identities, ones that partly stem from the bodily intensities with which they acquired this knowledge through musicking. It is not just about the possession of fan knowledge; it is about why this knowledge *matters*.

The second goal is to understand the ways in which chiptune capital informs fan agency in a way that is not deterministic (cf. Chin 2018, pp. 249, 253). In other words, to account for the fact that fans do not always act entirely consciously, nor in rational or calculating ways, nor through rigidly predictable behaviours (Hills 2002, pp. 57; Duffett 2013, p. 132; Peter 2014, pp. 47-9). Rather, we can consider chiptune capital as informing the *potential* to act rather than as a set of values that rigidly define fan activities (see Chapter 5 on ludomusical potential, p. 162).

The third goal forms an essential tension with the second. While we must take into consideration the rhizomatic nature of fan behaviours, we can identify the main types of musical activity that informed by chiptune capital and, thereby, which kinds of actions fans perform to mediate the ‘homecomings’ of chiptune fandom. This aim is comparable to the ‘perspectives’ that Fiske outlines – as ways of broadly categorising kinds of fan behaviour – though without an economic model of fan production (cf. 1992, pp. 34-45). To theorise the relationship between chiptune capital and fan agency in a way that achieves these three goals, the concept of media literacy provides a useful framework.

### **3.2 Media Literacy**

‘Media literacy’ describes an individual’s proficiency to interact with multimedia technologies and transmissions and is a research field that has seen insightful development through a broad spectrum of disciplines (see Aufderheide 1993; Livingstone 2004, p. 4; Palfrey and Gasser 2010; Hobbs 2011; Roepke 2011; Lin et. al. 2013; Potter 2013).<sup>99</sup> Despite the varying contexts of these studies, each typically outline three core abilities necessary for media interaction, all of which are informed by the relevant knowledge: accessing and operating media technologies,

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<sup>99</sup> Including: pedagogy and media technologies, competencies in multimedia interpretation, and, most relevant to chiptune capital, participatory new media and transmedia cultures, video game literacy, remix cultures, and ludomusicology (see Jenkins 2006b; Zagal 2010; Lessig 2008; Van Elferen 2016; Fritsch 2016).

interpreting media transmissions, and creating media. With the double goal of analysing chiptune capital as an agency informant in mind, however, one study into media literacy stands out as a viable framework.

Although W. James Potter's research into media literacy does not extend into (ludo)musicology, fan studies, or chiptune, his work presents an adaptable outline of media literacy with an important addition that will benefit the analysis of chiptune capital and mediation. Potter's definition of media literacy focuses on how users become competent to interact with media through the relevant knowledge, and with emphasises on the importance of personal factors in this process (2013, pp. 14-5, 23, 27-9). Potter argues, in fact, that personal factors are necessary for a person's media literacy to even function. Such an approach then makes this framework ideal for the analysis of chiptune capital and its relationship to the 'homecomings' of chiptune fandom.

### ***3.2.1 The building blocks of media literacy***

Potter argues that media literacy consists of three intersecting building blocks: knowledge structures, personal locus, and competencies (*Ibid*, p. 15). Both building blocks of knowledge structures and competencies are present in many works on media literacy, which mainly focus on how the competencies through which we interact with media are enhanced by the relevant knowledge. These competencies typically include: the competencies of access and operation, through which we engage with and manipulate media transmission technologies; interpretation, through which we process and make sense of the information presented to us by media transmissions; and creation, through which we create our own media transmissions (*Ibid*, pp. 10, 14, 15-18). The building block of personal locus, however, is the core of Potter's framework.

Our personal locus, according to Potter, is the engine of our media literacy; it describes the ways in which our minds govern our motivation to interact with media – 'our energy and our plan' – and the decisions we make in the process (Potter 2004, pp. 97-9; 2013, pp. 15-6, 22-3). The 'goals and drives' of our personal locus are fed by the knowledge structures we retain in our memory – like the 'raw materials' that feed into the engine of our media literacy – through which we seek out the media we desire and exercise the relevant competencies to interact with them (Potter 2004, pp. 68, 97; 2013 pp. 9, 15-6). The media we choose in the present is often guided by the ways we have experienced media in the past; as this knowledge feeds back into our personal locus, we become able to seek out desirable or relevant media experiences and, ideally, avoid those that we deem negative or irrelevant (Potter 2013, p. 9).



Potter contends that our personal locus operates in two mutually dependent conscious and unconscious modes (2004, p. 69). In conscious mode, we are actively aware of the kind of media we want to use, the options available to us, and the ways in which we wish to use or operate them; in unconscious mode, such drives and decisions are made ‘automatically’ and outside of our immediate awareness (*Ibid.*, pp. 69-70). After establishing the three building blocks of media literacy, Potter’s interest turns to the correlation between the development of our knowledge structures, our awareness of the ways in which we can use media, and our abilities to better steer the outcomes and gratifications of our media usage (2013, 19-23).

Through Potter’s three building blocks, we now have a clear analytical structure through which we can trace the ways in which knowledge – as capital – becomes active and informs the agency of the possessor in their media interactions. If we also apply an actor-network perspective to Potter’s media literacy outline, we can understand that the knowledge structures he describes also function as an actant in the same way as fan cultural capital. We could then explore which kinds of knowledge structures inform the media literacy of the possessor, like the raw materials to act, the ways in which this knowledge feeds into their personal locus, and the kinds of competencies they execute in relation to the media they choose. By adapting these building blocks and their relationship to the context of this study, Potter’s media literacy framework has great potential for the analysis of chiptune capital.

### **3.3 Chiptune Literacy: Three Building Blocks**

In this section, each of Potter’s media literacy building blocks are used to achieve the analytical goals outlined in subsection 3.1.2. The ‘knowledge structures’ building block will help to address the first goal regarding the key areas of chiptune fan knowledge; the ‘personal locus’ building block will help address the relationship between chiptune capital and fan behaviour in a not deterministic way; the ‘competencies’ building block, finally, provides an outline for the kinds of action that fans perform within chiptune actor-networks. As these building blocks work together, we can understand that chiptune capital thus informs ‘chiptune literacy,’ which names the mediatory agency possessed by chiptune fans in relation to the ‘homecomings’ of their fandom.

#### ***3.3.1 The knowledge structures of chiptune capital***

Potter contends that our knowledge structures develop through daily exposure to *all* forms of sensory information and reside within our memory; they are ongoing, accumulated through our daily experiences – both through media and beyond – and continually (re)constructed and

(re)organised over time (*Ibid*, p. 16-7). Here, Potter makes an important distinction between information and knowledge. This distinction is usefully framed as the difference between ‘what’ on the one hand and ‘how and why’ on the other (*Ibid*). The ‘what’ constitutes the sensory information we might encounter through media. For chiptune, this might consist of the sensory information mediated by such non-human and non/musical actors as rhythmic bursts of filtered white noise; by a Nintendo Game Boy modified with new controls and interfaces that enable live chiptune performance through LSDJ; or by the rippling telephone chords that punctuate chiptune arrangements. Knowledge, the ‘how and why,’ describes the ways in which we mnemonically retain media information after we have un/consciously captured and processed it – for instance, how we have related to or experienced this information, and why or why not it may be important (*Ibid*).

Once formed, knowledge structures guide us in our future media interactions (*Ibid*, pp. 10, 16). We can then begin to see the importance of chiptune capital’s knowledge structures as the ‘raw materials’ of chiptune literacy: they guide the ways in which fans participate in chiptune’s social-musical interactions and are, thereby, fuel their agency in the ‘homecoming’ process. It is important to understand that knowledge structures do not operate in isolation: all are interconnected, overlap, and are permeable to one another (see further in subsection 3.3.2). However, for the purpose of analysis, the ‘raw materials’ of chiptune capital can be categorised into the knowledge structures of: chipsound knowledge, contextual knowledge, musical knowledge, and self-knowledge.

### ***Chipsound knowledge***

For a musical genre, practice, and fandom fundamentally reliant on the PSG mediation of audio, regardless of its remediating source, the most prominent knowledge structure within chiptune capital is chipsound knowledge. Once established, chipsound knowledge structures can be likened to what Carlsson fleetingly terms a ‘beep-literacy’ which, in the context of this study, is defined as an expertise and familiarity in chipsound both in terms of what they sound like and the kind of chip-musical technologies that transmit them (cf. 2010, p. 20).

Chiptune fans will verbally reveal their chipsound knowledge in varied levels of detail. Many fans simply declare that they ‘like the way [chiptune] sounds’ (see participant 55, age category 36-45, in appendix). Others will capture their chipsound recognition and admiration through such details as ‘harsh noise and simplicity,’ the ‘raw’ and ‘inorganic’ qualities of PSG oscillators, or perhaps the ‘uniqueness’ of chipsounds and the ‘purity’ of 8-bit waveforms (see survey participant 41, age category 26-35, in appendix, p. 229; see further in Chapter 4 on

chipsound ‘authenticity,’ p. 148). Even such descriptions of chiptune as ‘warm and fuzzy’ sounds, as participant 47 claims, or participant 30’s somewhat tongue-in-cheek response of ‘I liek the bleps (*sic*)’ – meaning ‘I like the bleeps’ – are valid demonstrations of chipsound knowledge (participant 47, age category 36-45; participant 30, age category 36-45, see appendix, p. 229). Even the ability to define what might or might not constitute the timbre of a ‘bleep’ and, moreover, whether said ‘bleep’ is evocative of chiptune, is evidence of chipsound knowledge and its mediation of how fans perceive sound.

On the more specialist end of the spectrum, chipsound knowledge structures also inform the ways that fans can deftly trace chipsounds to their mediatory origins (cf. Paul 2014, p. 508). As survey participant 56 writes:

I find it interesting that even though chiptunes are so simple, each sound chip retains a certain character or ‘signature sound’ of its own. (Age category 36-45, see appendix, p. 229)

The familiarity and identification of the more nuanced differences between PSGs and their sound synthesis methods – such as between the use of PSG hardware and its virtual emulation – also utilises and demonstrates capital in chipsound in action.

A notable example are the ways in which fans notice differences in mediation between hardware Commodore 64 SIDs and their emulated counterparts. In addition to its ring modulator, hardware SIDs are also distinguished by their analogue highpass and bandpass filters, which mediate a distortion effect as high amplitude signals pass through them. The timbral effect of this distortion is not unlike that of an electric guitar mediated through the distortion of an amplifier. Emulations of the SID, by comparison, markedly lack this distortion and present one of many such difficulties of ‘authentically’ emulating the nuances of all PSG hardware and their unique mediatory quirks (Höltgen 2019).

YouTuber Redacted has uploaded their own comparison between the mediations of hardware and emulated SIDs (both 6581 and 8580 models).<sup>100</sup> In their video, Redacted plays SID music files and switches between different forms of mediation for comparison: between hardware 6581/8580 SIDs and emulated 6581/8580 SIDs. The distortion mediated by SID hardware becomes a point of reference in this video and is used as a marker to emphasise the differences between hardware SID sounds and emulated ones. To illustrate this point, at 10:52

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Redacted

in the video, Redacted loads the SID file ‘Gloria’ into the unemulated hardware 6581 SID.<sup>101</sup> Immediately, distortion is noticeable; in the opening 8 bars, the frequency sweeps of the bandpass filter generate that distinct gravelly, metallic, and electric guitar like tone, particularly as the peak of the filter accentuates bass frequencies. As this occurs, Redacted assures the listener ‘for some of you, this might sound broken but no, it is not broken. It *should* sound like this’ (2018, emphasis added). This statement – along with the content of the video itself – is a demonstration of chiptune capital: a value judgement.

At 11:36 in the video, ‘Gloria’ is restarted and Redacted switches the mediation of the musical code to an emulated 6581 SID. The emulated filter sweeps in the opening 8 bars of the song are enough for the case to be made: the distortion is gone. The character of the SID hardware is supplemented by the mediations of different PSG and chipsound actors: their emulated filter sweeps are cleaner, and their processing of audio is comparatively graceful and consequently less dynamic to the mediation of SID hardware. After this switch in mediation, Redacted remarks ‘as you can hear, there is no distortion like on the *real* chip’ (*Ibid.*, emphasis added). Like Redacted, the fans in the comments also pick up on the point of distortion as a marker of ‘real’ SID hardware and, thereby, a hallmark of chipsound ‘authenticity.’ In the comments section of the video, YouTuber Redacted even cites the ‘Gloria’ example as the definitive comparison between hardware and emulated SIDs, in which the analogue filter of the ‘real’ SID ‘shines through’ (2018). Another, Redacted, claims the comparison between hardware and emulation is like ‘comparing a real piano to an electric one,’ in which the ‘real’ SID offers a greater deal of dynamism, texture, and ‘uniqueness’ (2018).

Whether such mediatory differences are of consequence to the fannish enjoyment of chiptune is a matter of personal taste. Variations in capital in chipsound knowledge structures between fans can then dramatically steer fannish discourse on chipsound tastes, the very chip-musical engagements in which fans participate, and their resulting ‘homecoming’ identifications.

### ***Contextual knowledge***

The contextual knowledge structures of chiptune capital inform the ways in which fans ascribe – and creatively play with – chiptune’s connotative relations, and broadly develop through exposure to chiptune and to other forms of media and culture. Exposure to chiptune includes

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<sup>101</sup> A chiptune composed by Mitch and Dane using the Commodore 64 in 1996.

its pre-existing (sub)cultural and media contexts, which might be the techno-cultural history of microchip audio, chip-musical technologies and chipsounds in video games, the subversive piracy of demoscene/cracktro distribution, and the ethos of ‘achieving more with less’ (see Introduction, pp. 11-9; see participants 1, 39, 56, 67, and 71 in appendix, p. 229).

Key instances of this influence can be witnessed in the more purist attitudes held by some chiptune fans. Survey participant 29, for example, describes their attraction to the ‘rawness’ of chipsounds and refers to a special ‘authentic’ connection felt when using original chiptune hardware (age category 26-35, see appendix, p. 229; cf. Benjamin 2008, pp. 14-31). The use of LSDJ on the hardware of an original Nintendo Game Boy is referenced specifically, as they describe the ‘hefty weight’ of the casings and the open-ended ways in which they can be modified to incorporate new musical controls. Participant 29 acknowledges that, for their own chiptune fandom, the ‘authentic’ values of the Game Boy are rooted in what they describe as ‘old hardware’ in the context of a ‘modern world’ (see also participants 12 and 45 in appendix, p. 229). While the hardware interface of the Game Boy and its modifications are also non-human mediators of these qualities, in terms of contextual knowledge it is these structures within participant 29’s chiptune capital that largely inform their ‘knowing’ of the Game Boy’s ‘authentic’ values in relation to chiptune’s own contextual history.

Exposure to the (sub)cultural and multimedia contexts that might be considered ‘external’ to chiptune’s immediate sphere include, for example, film, television, popular culture, other musical genres, media technologies and franchises, and the (sub)cultural relations of each (cf. Fritsch 2016, p. 97; cf. Zagal 2010, pp. 23-4). Examples of this can be observed in the fannish connotations made between chiptune and other music and media franchises, and even vice versa (see further in Chapter 4, pp. 129-44).

Chiptune’s intertextual creativity is also prominently fed by contextual knowledge structures. Chiptune intertextuality reaches far and wide through the musical fingertips of its fans; there are no limits to the breadth of cover versions, remixes, and intergenerational works that fans create and share with their peers. We have seen how chiptune intertextuality spans such subgenres as Nintendocore, the rearrangement of contemporary VGM soundtracks through different chipsound formats, and bit-pop cover versions of pre-existing musical pieces. With such diversity in mind, we can understand that the contextual knowledge structures of chiptune capital inform three key areas of proficiency: first, the awareness of the pre-existing contexts of chiptune; second, how these contexts might relate or compare to other capital they may possess in ‘external’ multimedia and (sub)cultural contexts; and third, how such contextual capital – among others – might form a resource for intertextual chiptune creativity.

All three proficiencies take place and converge in the fannish reactions to 8 Bit Universe's bitpop cover version of 'Owner of a Lonely Heart,' originally by Yes (2016; 1983). Post millennium, Yes's original gained notoriety through its use in the soundtrack to Rockstar's video game *Grand Theft Auto: Vice City* (2002).<sup>102</sup> Fannish references to this connection are present in the comment section of 8 Bit Universe's video upload of their chiptune remix. YouTuber Redacted playfully claims that 8 Bit Universe's cover version evokes the imagery of an 8-bit video game version of *Grand Theft Auto: Vice City* (2019). Another, Redacted, claims that Yes's original recording and production of 'Owner of a Lonely Heart' always<sup>cted</sup> reminded them of the 16-bit SNES chiptunes heard on the soundtrack to Capcom's *Mega Man X* (2018; Capcom 1993). Replying to this comment, YouTuber Redacted makes the same connotation and refers to the harmoniser effect used on the electric guitar solo in Yes's original (2018). A harmoniser is a musical effects unit that adds harmonies – in variable increments – to the pitch of the audio signal passing through it. As Redacted points out, such an effect is also used prominently in Setsuo Yamamoto's soundtrack to *Mega Man X*; a similar effect can be heard prominently in the opening four seconds of the piece *Storm Eagle*, sounded through bit-crushed audio samples of an electric guitar (1993).<sup>103</sup>

Given the specific mention of 16-bit chiptune, timbre plays a notable role in Redacted's connotation. Yes's 'Owner of a Lonely Heart' heavily used the 1979 Fairlight CMI sampler in its production – which boasted 8-bit sampling capabilities – whose mediatory aliases can be heard in the drum samples and orchestral stabs of the original piece. SNES chiptunes – running on a 16-bit system – were also sounded by low quality, 8-bit PCM, not unlike the sound quality of both the Fairlight and the Commodore Amiga (cf. Introduction, pp. 10-1). Redacted's connection between the Fairlight mediation on 'Owner of a Lonely Heart' and the characteristics of SNES chiptune sees their chipsound knowledge and contextual knowledge structures feeding into one another. While 8 Bit Universe's bit-pop cover might have overtly combined the musicality of Yes and the constraints of chiptune, encouraging Redacted to display their fannish capital on these contextual connotations, the contextual knowledge structures of chiptune capital can inform such connotations without direct reference (see subsection 3.3.3). Redacted's exposure to both the production of Yes's 'Owner of a Lonely Heart' and 16-bit chiptune, namely those heard in *Mega Man X*, have resulted in an intertwined capital in early digital audio production qualities and their pre-existing contexts.

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<sup>102</sup> Available here: <https://www.youtube.com/watch?v=EDGLRdB0pgY>

<sup>103</sup> Available here: [https://www.youtube.com/watch?v=ht7YJptvt\\_w](https://www.youtube.com/watch?v=ht7YJptvt_w)

### *Musical knowledge*

The musical knowledge structures of chiptune capital are like contextual knowledge structures in that they develop through all manner of musical exposure – popular music, film music, television music, and other VGM – and not just through exposure to chiptune. Musical knowledge structures inform the fluency of chiptune fans to interpret musical elements – such as articulations, dynamics, expressions, forms, harmonies, melodies, rhythms, and tempo – in terms of the tropes, moods, movements, feelings, and messages they might convey (cf. Van Elferen 2016, p. 36). This proficiency is best thought of in relation to Small’s musicking: the abilities to participate within and fannishly enjoy chiptune – or indeed any form of music – are not exclusive to those with advanced capital in musical education and training (Chapter 1, pp. 48-54). Some fans, for example, simply describe their chiptune ‘homecomings’ in terms of ‘happy’ or ‘feel good’ music, as ‘upbeat’ and ‘catchy’ ‘vibes,’ as ‘moving,’ or in terms of the emotional ‘stories’ that they might tell through their musical arrangements (see survey participants 13, 34, 36, 55, 62, and 72 in appendix, p. 229; see further in Chapter 5, pp. 152-55). All such interpretations are un/consciously informed by musical knowledge structures (cf. Potter 2013, pp. 15-7; see Clarke, Dibben, and Pitts 2010, pp. 149-69).

Other fans will make more specific musical references, such as describing how they enjoy the ‘minimalism’ and ‘melody-driven’ qualities of chiptune (see appendix, p. 229). Participant 34 references their enjoyment of chiptune cover versions, claiming that the melodies and harmonies in the popular music they enjoy – including The Smiths, Queen, and Steely Dan – become more pronounced through their rearrangement into the ‘purity’ of 8-bit waveforms, arpeggiated harmonies, and musical arrangements condensed into the bare minimum of four or less monophonic audio channels and subtractive synthesis waveforms (age category 26-35, see appendix, p. 229).<sup>104</sup> Through these ‘stripped down’ versions of popular music, participant 34 claims they are able to enjoy their musical arrangements in ‘new ways.’ Participant 25 is also fond of chiptune cover versions: ‘it’s enjoyable to hear a change on a song you already know in a style and sound that you also know. It’s new, it’s old, it’s awesome’ (age category 36-35, see appendix, p. 229).

Such claims further attest to the fannish enjoyment of hearing chiptune’s composition process itself, and the ways in which musical knowledge structures can also mediate notions of chiptune ‘authenticity.’ Chiptune composition – particularly via tracker sequencers – is cited by many fans as an ‘authentic’ process of musical creativity because PSGs ‘force’ composers

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<sup>104</sup> Particularly if these covers are arranged via chiptune hardware or an emulated tracker sequencer.

to creatively work around their constraints (see participants 30, 65, and 69 in appendix, p. 229). To emphasise a key point from Chapter 2: the constraints of chiptune – in all their varying forms – must be *heard* (see pp. 71-7). The ‘homecomings’ of chiptune fandom are also mediated through the craftpersonship of ‘weaving’ complex and fully realised musical pieces around the constraints of their sounding technologies (participant 55 age category 36-45, see appendix, p. 229).

In admiration of such craftpersonship, participant 69, among others, demonstrates their musical fluency in these techniques in fannish terms of ‘unusual and very compositionally complex material you just don’t get in other styles of music’ (age category 26-35, see appendix, p. 229). In slight contrast, participant 38 enjoys the musical qualities that chiptune compositional processes enforce *because* they resonate with another style of music and composition method (age category 36-35, see appendix, p. 229). Participant 38 largely attributes their discovery of chiptune to ‘the canon method of composition,’ which ‘transfixed’ them through their experience of ‘classical composition’ – potentially through their education – and is a method they apply to their own arrangements of 8-bit chiptunes.<sup>105106</sup> Differences in chiptune capital aside, both reasons cited by participants 69 and 38 for enjoying chip-musical qualities illustrate how their musical knowledge structures act: mediating their fluency in listening and interpreting the craftpersonship of musical elements in the context of chiptune.

Related to the topic of chiptune composition, musical knowledge structures also inform chip-musical creativity. Many chip-musicians are already musically and instrumentally trained, and chiptune forms an extension of their already existing musicality (see participants 7, 12, and 29 in appendix, p. 229). Yet as survey participant 55 remarks, a key element of the participatory attraction of chiptune is that its composition methods – such as the hexadecimal coding of tracker sequencers – are unrestricted to the ‘virtuosity’ of trained musicians and ‘master soloists’ (age category 36-45, see appendix, p. 229). As many fans and artists have stated, chiptune is creatively appealing because, while music theory and instrumental technique will inevitably aid musical composition and arrangement, many of the interfaces and methods through which chiptune can be composed are deemed ‘accessible’ to those without such expertise. Participant 31 from my survey, for instance, states the following on their enjoyment of chiptune for the reason of ‘creativity:’

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<sup>105</sup> A melody-orientated method of composition, in which a main melody is imitated by other musical parts after a given duration, forming a contrapuntal relationship.

<sup>106</sup> Although, they do not elaborate on any specific instances of this or, indeed, why they are so enthusiastic about the canon method of musical composition.



[Chiptune is] really about letting yourself flow. This isn't like doing music with similar instruments but a different time signature, like in the case of covers. You can really shape each instrument how you see fit, and while knowing musical theory and stuff like that helps, it doesn't seem to be as necessary. I think this can enable you to have a sort of child-like finger painting approach to it where there are no rules except the ones you make for yourself, and even then those can be treated as suggestions at best. (Age category 26-35, see appendix, p. 229)

Chiptune composition presents quite an interesting case study for both the use and the development of musical knowledge structures. 'Learning, experimentation, and curiosity' are cited by participant 12 as key elements in the process of chiptune creativity and, in addition, fan appeal (age category 26-35, see appendix, p. 229). Through learning and experimenting with tracker code, fans can learn about the musical theory and intentions behind these techniques as well as *hear* the musical effects they mediate. We can then already begin to see how musical knowledge structures – like all those who inform chiptune capital – develop through both musical listening and creative play in chiptune and beyond (see Chapter 5 on ludomusical traces, pp. 168-80).

### *Self-knowledge structures*

Self-knowledge structures are described by Potter as our familiarity with media on a personal level (cf. Potter 2013, pp. 17, 178, 210, 228). The self-knowledge of chiptune capital has the same function as it does in Potter's framework, and also reflects the 'personal myths' that Peter identifies in her study of EDM fan subjectivities. This kind of knowledge predominantly informs the 'knowing field' of chiptune fandom: a person's understanding of their chiptune fandom in terms of personal identifications and communal attachments, and the emotional convictions and intensities of these relations (see initially in Chapter 1; see survey participant 56 in appendix, p. 229). As mentioned earlier, we can observe self-knowledge on display as fans describe their personal affections for chiptune, which interlace the more factual aspects of chiptune capital with sentimentality and enthusiasm. A fan under the handle of *Redacted* illustrates this point as they describe their discovery of chiptune in a *Chipmusic.org* forum post:

I'm just a chip music observer, but I've been flat out hooked since discovering [the band] 8bitpeoples in 2006, and here's why. My Dad's an incredibly strict

Muslim and music is discouraged in Islam, so the only way I could get away with listening to [music] growing up [was] the sound of my video games. So for me it's (*sic*) started with the nostalgic aspect but soon soared to new levels of appreciation as the scene progressed, and now it genuinely excites me that there's an ever expanding sea of super varied and fanbastardtastic (*sic*) chip music out there for me to discover, every day. I was insanely delighted when I stumbled on chip music, I'd been trying to convince myself for ages I was enjoying Nintendocore. PFFFFT. But yeah, more than anything it's the extending of a hand to that beautiful, beloved [video game] system and saying "Oh no old friend, I'm not done with you yet. You're coming with me." And then dressing him up in a tuxedo and fixing him a motherfucking cocktail. (2013)<sup>107</sup>

In Redacted's post, we can trace a number of ways in which their self-knowledge structures are 'mapped' with other aspects of their chiptune capital (see further in subsection 3.3.2). Their chiptune fandom is rooted in the context of video gaming which, in turn, is entwined with certain aspects of religious, cultural, and familial aspects. Their nostalgia for video games is also cited as a catalyst for their ongoing interest in chiptune, flourishing, as they convey, into the heterogeneous variety of chip-musical styles, practices, bands, and (sub)genres that contemporary chiptune has to offer.

We also gain insight into Redacted's musical knowledge structures as well as their contextual ones, and the ways in which aspects of these kinds of knowledge, too, are woven into their self-knowledge. They are dismissive of Nintendocore in their statement, distancing it from chipmusic. As briefly mentioned in the Introduction, Nintendocore presents the mixture of chiptune's constraints with musical tropes and textures from the genres of heavy metal and punk. With Thornton's ideas on capital in mind, we could read this aspect of Redacted's post as a display of capital in what they consider to *be* 'chipmusic.' Within Redacted's chiptune capital, the musical and contextual aspects of heavy metal and punk do not resonate with what they consider 'authentic' to chiptune in their viewpoint and, therefore, are not integral components of their chiptune fan identity.

As Redacted implies in their closing sentence through the metaphor of taking an 'old friend' with them and offering this 'friend' a new lease of life, like many chiptune fans

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107

Redacted

Redacted enjoys the aspect of chiptune that remediates the constraints of chiptune systems beyond their commercial obsolescence and disposal. As metaphorically described by Redacted in their sentiment ‘oh no old friend, I’m not done with you yet. You’re coming with me,’ PSG remediation enables them to maintain their love for a video game system that afforded them musicking despite the constraints of their family life – though which forms of system/PSG/chipsound are not specified – as well as allow for this fannish love to spread into new chip-musical practices.

Like pieces of a puzzle, the self-knowledge structures of chiptune capital flourish from the very events that instigate chiptune fandom and develop through every subsequent time that chiptune resonates with autobiographical significance. Their importance is that they point towards the *future* of chiptune fan musicking: as previous experiences with chiptune guide future fannish experiences and practices. Through their prior experiences with chiptune, the knowledge fans gain enables them to exercise an awareness of the chiptune aesthetics and practices that they interact with and pursue, and indeed whether these interactions evoke and affirm the sound of ‘home.’ As a part of chiptune capital, then, self-knowledge structures – in conjunction with the other components of chiptune capital – play a significant role in how chiptune fandom might develop and, moreover, the decisions that chiptune fans make in the process. Here, we come to the importance of the personal locus.

### ***3.3.2 The personal locus: chiptune matters***

As outlined in section 3.2, our personal locus is the engine of our media literacy. Fed by our knowledge structures, the personal locus describes the emergence of our media-related goals and drives, and the un/conscious decisions we make as we interact with media. In the context of chiptune, the personal locus of the chiptune fan can be understood as the conduit between what they know and enjoy about chiptune (their chiptune capital), and the chip-musical inter/actions they pursue and manipulate to mediate the ‘homecomings’ of these qualities (their chiptune literacy). In Potter’s work, the personal locus is described in general terms of media information processing tasks, such as exercises involving meaning-matching, filtering the important aspects of media messages, and broadly deciphering how we react to the media information we consume (2004, pp. 97-108). To translate Potter’s concept into the context of chiptune fandom, we can understand the relationship between chiptune capital and the personal locus of chiptune fans through Grossberg’s concept of the ‘mattering map’ (1992a, pp. 57).

Mattering maps describe the ways in which our minds create ‘investment portfolios’ of our experiences with media and culture (Grossberg 1992b, p. 82). Through this concept,

Grossberg explores the relationship between the capital that fans possess in media and culture, and the ways in which it influences their future activities and experiences. Mattering maps form through intersections of both the factual and the intimate aspects of our daily experiences, and their constituent knowledge is organised in relation to how and why these experiences mattered to us, with what intensity and in varying degrees of investment (Kaschak 2010, pp. 6-18; Grossberg 1992a, pp. 56-9). Mattering maps might then contain, for instance, knowledge of our relationships to specific personal objects and their qualities, individual and communal ideologies and values, pleasures, practices, memories, fantasies, and desires (Grossberg 1992a, pp. 57-8).

The notion of the mattering *map* emphasises that our minds do not just create and store this knowledge like an ordered, two-dimensional ‘index’ (Lowenstein and Moene 2006, p. 155; Kaschak 2010, p. 12). Mattering maps are multidimensional webs of associative relations, and many inexplicable and unpredictable mattering connections between different fragments and experiences of our lives can form within their complex webs (Kaschak 2010, pp. 6-18; Grossberg 1992b, pp. 84, 283). As Grossberg states, mattering maps are ‘socially defined’ (1992a, p. 398). This statement is made without reference to actor-network theory, but there is a notable parallel between both Grossberg’s and Latour’s use of the term ‘social’ (cf. Chapter 1, pp. 65-9).

The mattering maps we construct in relation to our media experiences, for instance, are ‘socially’ defined in that both their constituent non/human actors and actants, as well as the circumstances and environments in which we interact with them, play a role in the mediation of our perceptions. Mattering connections can cross perceived categorical and experiential boundaries, such as those between media narratives and ‘real life,’ between the individual and the communal and cultural, humans and non-humans, and perhaps times and places (cf. Hills 2002, pp. 60-1; Kaschak 2010, pp. 9-12; see Chapter 6, pp. 184-9). Such connections take place as we map the mattering connections between specific television programmes and the living rooms of our grandmothers, as we mnemonically connect specific songs or musical ‘vibes’ to the villas and shorelines of holiday destinations, and as we associate loved ones with specific personal effects. Mattering maps are not always constructed with cause-and-effect logic.

In addition, the mattering relations we ascribe to our experiences are not concretely defined. Mattering maps are multi-dimensional as well as dynamic and amorphous, as clinical psychologist Ellyn Kaschak describes them:

The Mattering Map is not a map like the ones hanging on the walls of geography classrooms around the world. These flat, two-dimensional representations fall short in several aspects. The mattering map is a living, breathing multi-dimensional, morphing entity. It cannot hold still. It is alive with forces and vectors that change its shape and its valence slowly or rapidly, but constantly. The mattering map, like a multi-dimensional kaleidoscope, comes to rest only when observed and what is observed is not what was there a moment before the observation altered probability into presentation. [The mattering map invokes] a complex combination of energetic forces encountering each other in predictable and unpredictable ways. [...] What was a moment ago central becomes peripheral and what was a moment ago irrelevant can become central. (2010, p. 12)

With every new thought, feeling, and non/human interaction our mattering maps might shift and change unpredictably, at times morphing dramatically or slowly with every new interaction and often beyond our conscious perception (cf. *Ibid.*). Whatever matters to us in the present moment is only a snapshot of the current elements within mattering maps that are active (*Ibid.*). Once active by way of memory, knowledge can feed back into our awareness – our personal locus – informing what matters and *can* matter to us in our everyday lives, helping us to navigate our day-to-day experiences, complete tasks, and invest in desirable relationships and commitments (Grossberg 1992b, pp. 82-4, 398; cf. Lowenstein and Moene 2006, pp. 153-9). In the context of fandom, a similar form of guidance takes place.

Unique to each and every fan, mattering maps colour how they behave day to day and moment by moment, telling them ‘how to use and how to generate energy, navigate [their] way into and through various moods, and live in emotional and ideological histories’ (Grossberg 1992a, pp. 57-8). They also form the blueprints for their perceptions of who they are and how they relate to others, how they belong in the world and how to perceive it; they let fans know where ‘home’ is, how to find it, and how to recognise it (cf. Grossberg 1992b, p. 84). Accordingly, the self-attributed mattering significance of fan capital becomes an important reference point for the ways in which fans utilise media to construct and empower a stable sense of identity (1992b, pp. 85-6).

To build on the points made above, the knowledge structures of chiptune capital do not function in isolation. We can now understand that the knowledge structures of chiptune capital accrue as a mattering map: gained through variant forms of exposure to chiptune and beyond,

the knowledge structures of chiptune capital are mapped in relation to one another in terms of their mattering significance, blurring pre-existing contexts, and undergo continual revision through subsequent chiptune interactions. If chiptune capital describes the forms of knowledge a fan might possess, the chiptune mattering map describes the ways in which this knowledge is continuously and subjectively (re)organised in relation to its importance.

The mattering mapping of chiptune capital can be observed in fannish discourse and survey data. Chiptune fans readily express the mattering significance of the ways that the timbral qualities PSG mediation yield great power and ‘homecoming’ sentimentality, which prominently display mattering connections between chipsound knowledge structures and self-knowledge structures. highadventures’ forum post, shown above, is an apt example of the mattering mapping of chiptune capital’s knowledge structures. As is the case for many chiptune fans, chipsound timbres are indelibly mapped with tender memories of their childhoods. Such (mattering) mappings are present throughout my survey data and in online discourses between chiptune fans (see survey participants 7, 25, and 35, for example, in appendix, p. 229). In a *YouTube* upload of Nakamura’s ‘The Chemical Plant Zone’ piece for the SEGA Mega Drive video game *Sonic the Hedgehog 2*, for instance, many examples of chiptune’s mattering significance can be seen in the comments section, and in the conversations that ensue between users.<sup>108</sup> Among similar comments from other fans, YouTuber Redacted writes the following:

[This song is] bringing back some amazing memories, remember sitting on the floor in my parents’ house on the big tube tv, with my SEGA Genesis console plugged in, the first thing I did when I got home after school was hop on and put in *Sonic [The Hedgehog] 2* :) remember Tails could never keep up and he kept getting stuck in the chemicals XD. (2014)

In Redacted’s comment, we can see the ways in which chiptune can engender the ‘homecoming’ of such vivid mattering qualities from multiple aspects of their capital. The important thing to note here is that chip-musicking has re/mapped these connotations together, reviving the interconnected aspects of school life, domestic life and intricate details about the house and its furnishings, and aspects of the gameplay of *Sonic the Hedgehog 2*, all with an implied fondness and warmth (see Chapter 4 on hauntology, p. 129).

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<sup>108</sup> Available here: <https://www.youtube.com/watch?v=-LYB7iLZNWE>

As we have also seen, notions of chiptune ‘authenticity’ are not just listed as technical information: these details are also intertwined with impassioned descriptors of their ‘rawness,’ ‘uniqueness.’ The ways in which these qualities are intertwined with the character of the chiptune community – as survey participant 40 describes – are also evidence of mattering connections between different knowledge structures and a multitude of different inter/contextual associations (age category 19-25, see appendix, p. 229). On the *Chipmusic.org* forums, for instance, chip-musician Redacted describes their introduction to chiptune:

I started listening to chip music during a phase of listening exclusively to hardcore 80spunk, so I guess the rawness of the chip sounds sat really well with me. I stayed [in the chiptune community] because there’s so much diversity and because there’s (*sic*) happens to be some really really amazingly good music that released (*sic*) under the title of chip music. (2013)<sup>109</sup>

Contrasting with Redacted’s comment, in Redacted’s chiptune capital the mattering qualities of chiptune’s sonic characteristics and ideologies are connotatively mapped together with those of punk music and subculture. Consequently, the ‘homecomings’ they experience with either genre can re-awaken mattering connotations that span multiple fannish attachments and belongings (see Chapter 6 on 8-bit reggae, pp. 190-9).

Fannish reactions to chiptune can also verbally reveal mattering connections that stretch into a multitude of unpredictable contextual associations. Redacted’s mattering connection between Yes’s ‘Owner of a Lonely Heart’ and the 16-bit chiptunes of *Mega Man X* (as detailed above) is such an example. Other examples can be observed in the responses to YouTuber and musician Redacted’s demonstration of Plogue’s ‘Chipsynth MD’ – a VST emulation of the SEGA Mega Drive’s YM2612 chip.<sup>110</sup> Redacted discusses and demonstrates some famous FM synth patches and PCM samples from various famous SEGA Mega Drive video games, ripped directly from the game codes. The interaction between many YouTubers and Chipsynth MD’s mediation has also conjured a multitude of other mattering associations between FM timbres and video game memories beyond those that are mentioned in the video.

The comment section of Redacted’s video is filled with other YouTubers who fannishly display their chiptune capital in varying degrees of mattering significance and

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<sup>109</sup>

Redacted  
Redacted

<sup>110</sup>

intensity. YouTuber Redacted writes: ‘nostalgia for me is the sound of the Commodore 64, and the Prophet 5 [synthesizer] from movies like [John Carpenter’s] *Halloween 2* and [George A. Romero’s] *Day of the Dead* [...]’ (2019). Each of these elements have no intrinsic contextual link other than that, aside from the Prophet 5 synthesizer, they all originated in the 1980s. Within the knowledge structures of Redacted’s capital, however, the contextual relationships between these music technologies and films are subsumed and mapped together beyond pre-existing boundaries of context through the mattering significance of nostalgia.

Just as Potter frames knowledge structures as the ‘raw materials’ of our future media excursions, chiptune capital and its mattering organisations form the social-musical fuel of chiptune fan activity. The personal locus of the fan is the flame that ignites this fuel. As criteria from chiptune capital mnemonically feeds back into the personal locus of the fan at any given time – in varying mattering degrees and intensities – it can instigate their ‘homecoming’ goals of drives, creating both a desire for chiptune’s bleeps, bloops, and the ‘homeliness’ of their constraints, and an acute awareness in where and how to find them (see Grossberg 1992a on fandom as an ‘affective sensibility,’ p. 60).<sup>111</sup>

Given the shifting nature of mattering maps through fannish flows and ebbs, some mattering elements of fan capital might lay dormant, resurge unexpectedly, or inform the sensibility of fandom for a prolonged period (cf. Williams 2015, pp 2, 27-9). The *kinds* of ‘homecomings’ a fan might desire in the moment depends on which intersecting criteria from their chiptune capital is presently active and feeding into their personal locus, and with which mattering intensity, as well as other factors such as present moods or needs (cf. Jenkins 2006a, p. 59). Differences in capital and mattering significance between chiptune fans are also why some are drawn towards some forms of chiptune over others. After informing the sensibilities of fans, chiptune capital then also becomes a resource for the un/conscious decisions chiptune fans make, and the actions they perform, in their chip-musicking. This is knowledge-as-agency in action, the point where chiptune capital *becomes* chiptune literacy, through which fans enact their desired ‘homecomings’ and perform specific actions in the process. It is here that chiptune fans become mediators within chiptune actor-networks, which brings us to the final building block of chiptune literacy: competencies.

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<sup>111</sup> The nature of this desire, and how it is informed by chiptune capital, is explored in further detail in Chapter 6.



### 3.3.3 Chiptune literacy: competencies

According to Potter, media literacy competencies are ‘categorical’ in that they refer to the ‘tools’ we use to navigate our media encounters; not ‘tools’ in the sense of a physical object but, rather, specific forms of action we execute as we interact with media (2013, pp. 10, 45-6). We can broadly consider the competencies of media access and operation, media interpretation, and media creation identified in subsection 3.2.1. Incorporating Grossberg’s insights into Potter’s framework, we can understand that the ways in which we use these tools are informed by the present chemistry of our mattering maps – which knowledge is presently active and feeding into our personal locus. If our media competencies are the tools, *what* we use to navigate our media interactions, then our mattering maps guide *how* we access and operate media technologies, *how* we interpret media elements, and *how* we create media. With ANT in mind, our competencies are the tools of media navigation as well as *mediation*. Each action we make will alter the trajectory and experience of our media interactions.

Focusing on the fannish activities that permeate chiptune fandom, broadly speaking, chiptune capital enables competencies equivalent to the general media literacy ones of access and operation, interpretation, and creativity. The competencies of chiptune literacy are the competency to use chip-musical technologies and enact PSG remediation strategies (access and operation); the competency to attribute fannish and musical meanings to chiptune (interpretation); and the competency to participate in chip-musicianship (creativity). At any one time, and in any scenario, multiple mattering criteria spanning the knowledge structures of chiptune capital can feed into and guide the use of these competencies, consequently altering the agency of chiptune fans to mediate the ‘homecomings’ of their fandom.

The competency of access and operation in chiptune describes how fans will utilise chip-musical technologies to enact PSG remediation strategies, and to participate in chip-musicking. Chip-musicians notably demonstrate their competencies in this aspect of chiptune literacy through their compositions and live performances, as Marc Nostromo captures in an interview:

It’s like there’s a direct connection between your brain and the sound system, the interface is not in the way of your train of thought. [...] In LSDJ type interfaces it takes seconds to know whether or not it was a good idea. In other types of programs, it takes me a few minutes and then I don’t feel like trying the next iteration. (Carlsson 2010, p. 29)

Chip-musician Alex Mauer makes a corresponding claim, but with emphasis on the ways in which his chiptune capital – and chipsound knowledge structures in particular – have informed his competency of access and operation:

Usually before I make a song, I already know what console I want to use, and I already know what software I have to use in order to do it. [...] Usually, if I come up with a song by hearing it in a dream, I already know what soundchip is supposed to be used. (*Ibid.*, p. 37)

Every un/conscious choice that chiptune fans make through their access and operation competencies will alter both the formation and inter-objectivity of chiptune actor-networks. As Different sound synthesis methods and technologies, chipsound aesthetics, hardware PSGs and emulated oscillators, hacked Game Boys, chiptune on vinyl, on smart phones, and chiptune online: *every* PSG remediation strategy, as Chapter 2 identified, will engender different chiptune actor-networks and, accordingly, different mediations of fannish ‘homecomings.’ The choices of the fan in the matter – how they exercise their divergent competencies in accessing and operating chip-musical technologies – have a catalytical influence on the formation of chiptune actor-networks and the kinds of musical experiences they may engender. Specifically, in this capacity chiptune fans have the partial agency to ‘tailor’ their ‘homecoming’ experiences.

After their choices in remediation are made, the competency of fans to then operate the controls of their chosen chip-musical technologies will also have an ongoing mediatory influence within chiptune’s inter-objectivity, so long as the musicking lasts. Such manipulation can take place in a variety of different ways, depending on the affordances of the tech and the remediation strategy, the musicking scenario in question, and the present mattering map state of the chiptune fan. From iPhone playback controls and the navigation of chiptune artists, radio stations and playlists on Spotify, to sculpting SEGA Mega Drive style chipsounds through the ADSR envelopes and feedback dials of FM operators, to musically manipulating hardware PSG oscillators with video game controllers and MIDI interfaces: *all* have mediatory consequences. Every operation possible through the interfaces of chip-musical technologies are potential channels for the chiptune fan to exact their agency and mediate the ‘homecomings’ of their chiptune fandom (see ‘ludomusical fields’ in Chapter 5, p. 163).

The next main competency of chiptune literacy is fannish and musical meaning-making (in Potter’s terms: interpretation). The competency of media interpretation describes the

process that takes place as we filter media transmissions through our knowledge structures. As this process takes place, we ‘mine through’ the audio-visual, narrative, textual, physical, and technical components that constitute a given transmission; it takes place automatically upon our exposure to media, is ongoing throughout the duration of the exposure, and operates on both conscious and unconscious levels (Potter 2013, p. 7). The process of interpretation occurs on different scales: from identifying the qualities of individual media elements, to pattern recognition and distinguishing commonalities and differences between media elements, to analysing how these elements interact with one another and, thereafter, to media abstraction in which we decipher and ‘capture’ the messages or meanings these elements might convey through their varying scales of relations (*Ibid*, pp. 18-22).

The filtration-like process of interpretation is a key mediatory element of how fans – as human actors – shape the ‘homecoming’ qualities of chiptune. Chiptune capital, in this scenario, informs how fans listen, and how they subjectively generate and ascribe meanings to chiptune in terms of both sound and sentiment (cf. Van Elferen 2016, pp. 36-7). As is the case with their access and operation competencies, the ways in which fans interpret the chiptunes they hear in terms of ‘homecoming’ significance are also reliant on the kinds of knowledge that constitute their chiptune capital, and what matters to the fan in the present. As chiptune fans begin their musicking, multifaceted strands of mattering knowledge can resurge and act in the process of fannish meaning-making, potentially generating a synchronous multitude of fannish identifications and connotations that span the mattering maps of chiptune capital and beyond (cf. Hills 2014, pp. 19, 20). This process is also triggered and manipulated by the music and sounds fans hear, but the mechanics of how chiptune – and chipsound actors specifically – does this will be explored in the next chapter.

In a *YouTube* upload of Level 42’s piece ‘43’ from their eponymous album (1981), *YouTube* Redacted makes a mattering connection between Level 42’s musicianship and their chiptune capital in their comment: ‘this sounds like something off a *Sonic The Hedgehog* game in a way’ (2016).<sup>112</sup> ‘43’ is typical of Level 42’s sound: jazz funk and fusion, with Mark King’s penchant for slap bass driving the tracks over the Fender Rhodes chords and the Prophet 5 synthesizer melodies of Mike Lindup, the complex drum rudiments and displaced rhythms of Phil Gould, and the dynamic electric guitar solos of Boon Gould. Many video game composers of the 1980s and 1990s drew from their own tastes in music at the time, with styles of jazz funk and fusion bands and/or synthpop bands, such as the Yellow Magic Orchestra, forming a

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112

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noticeable influence on the arrangements and genre conventions of chiptune-based soundtracks (see McAlpine 2018, pp. 215-26). The soundtracks to the first three *Sonic the Hedgehog* games have a heavy jazz funk influence in their arrangements, rhythms, forms, melodies, and harmonies; the composer, Nakamura, was in a jazz funk band called Dreams Come True and evidently draws on this capital in his chip-musician work for SEGA.

For Redacted , Level 42's arrangement of '43' has triggered the synchronous emergence of mattering connotations between Level 42's sound, and their capital in the soundtracks for the *Sonic the Hedgehog* games – relying more so on their musical and contextual knowledge, and not so evidently their chipsound and self-knowledge. Replying to Redacted 's mattering connotation, a few other listeners make similar mattering connotations. Another, Redacted , replies stating that it reminds them of the SEGA Mega Drive game *Toejam and Earl* (2017; SEGA 1991). Redacted 's mattering connection between Level 42's sound and John Baker's soundtrack to *Toejam and Earl* – which also draws heavily from jazz funk styles as well as hip-hop – is also a mattering connotation, but one that displays a different mattering connotation to that of Redacted 's initial claim. A third, Redacted , acknowledges the influence of jazz funk and popular music bands such as Level 42 on video game soundtracks of the 16-bit SEGA era, and that they enjoy 16-bit chiptunes that fuse these styles.

Continuing the theme of mattering connections between chiptune and Level 42, chip-musician Fearofdark has arranged an 8-bit chiptune cover of Level 42's 'Turn it On' using FamiTracker – an NES chiptune tracker sequencer (2012; 1981).<sup>113</sup> Fearofdark has squished Level 42's original production into the following subtractive synthesis arrangement: two pulse waves, one for the lead melody – both Mark King's verses and Mike Lindup's falsetto chorus – and one for telephone chords, a triangle wave for the bass line, and a noise and two PCM channels for the drums. Intertextual chiptunes very deliberately strive to evoke and conflate pre-existing meanings and contexts, either to combine multiple mattering aspects of fandom in play, to playfully subvert pre-existing mattering connotations, or both. This is reflected in the comments of Fearofdark's video upload; YouTuber Redacted , for instance, writes:

WHAT... IS... THIS?????? You've combined my all-time favourite band with one of my favourite [chiptune/video game] systems... This is something I've never even heard of. Tell me more! (2012)

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113

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As explicitly illustrated by such creativity as Fearofdark's cover, all kinds of musical meanings that emerge through the 'homecomings' of chiptune are inherently intertextual in varying degrees as a result of their generation through mattering maps. Any fannish narratives and discourse – whether on *YouTube*, chiptune forums, or survey data – will include details of multiple mattering sites and connotations (cf. Hills 2014, p. 19).

The competency to participate in chip-musicianship (creativity) presents an intersection of all chiptune competencies. This is best illustrated in the case of intertextual chiptune creativity, in which chiptune capital becomes a resource to play with pre-existing technological and cultural contexts, and individual and communal meanings (see Fritsch 2016, pp. 100-11). All three competencies of chiptune literacy can be observed in the creation and reception of Leon Chang's chiptune album 'Bird World,' through which we can also observe the mattering influence of chiptune capital in his creativity (2017).<sup>114</sup>

Chang has crafted a 12-song soundtrack to a SNES video game that does not exist (Jenkins 2017; see further in Chapter 4, p. 129). In addition to the names of each track conjuring the cliché videogame playscapes of beach and forest environments, twinkling citadels and other fantastical spaces rendered through pixel art techniques – such as 'Winter Melon Valley' and 'Popcorn Castle' – every track presents a musical actor-network brimming with mattering references for the ears of chiptune fans, and VGM fandom in general. Chang's musical creativity lends the album the air of a 1990s SNES RPG, a cartoonish platform-hopper, or perhaps a PC point-and-click adventure all set within and around the babbling brooks, mossy rock faces, pixelated flora and fauna, and overly green canopies of 'Bird World.'

Beginning with the chiptune competency of accessing and operating chip-musical technologies, we can clearly hear evidence of many aspects of Chang's chiptune capital and, notably, his chipsound knowledge structures. The deliberate remediation of SNES chiptune and the incorporation of other forms of video game sound effects make this clear. As he reveals in an interview, moreover, these qualities evidently *matter* to Chang. He cites fond memories and experiences with both SNES and Sony PlayStation video games in his youth: 'I definitely draw upon a lot of different games from my past – different sound FX and drums, little references to old games like *Yoshi's Island*, *Spyro the Dragon*, and *Ape Escape*' (in Jenkins 2017).

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<sup>114</sup> Chang's Bandcamp is available here: <https://leyawn.bandcamp.com/album/bird-world>

Much of the instrumentation on Chang's album is created using a chiptune VST called 'C700' by PPSE – a faithful emulation of the SNES's SPC700 PSG, which generated sample-based chiptunes through PCM.<sup>115</sup> The brass sections in 'Welcome to Bird World' are noticeably and, moreover, *deliberately* 'MIDI-ocre.' The string samples deployed throughout the album are just that: samples, low-quality and skittishly looping over the audio clips of their cutoff points. The SNES quality string samples are evocative of Nobou Uematsu's soundtracks to the SNES instalments of the *Final Fantasy* video game series which, as Chang also reveals in his interview, are another mattering influence on the choices he has made in composition (Uematsu 1991; Square 1994; in Jenkins 2017). In addition to choices made in timbral palette, Chang employs several musical tropes that play on the capital of VGM fandom, notably utilising his contextual knowledge structures. The arpeggiated major 9<sup>th</sup> chords on synthesized marimbas in *Green Tea Forest*, for instance, evoke the in-game sounds used to signify collecting an item or a power-up, not so far removed from the arpeggiated ripples heard as Mario collects power-ups in the *Super Mario* video game series. The music of *Super Mario*, in fact, is also mentioned as a great inspirational source for Chang (Jenkins 2017).

Chang also surprises the listener with the sporadic deployment of 'familiar' videogaming soundbites. The piece 'Battle on Mantou Mountain' is a notable example of a track that uses samples ripped directly from 1990s video games. The drums of the piece are the very same gritty, PCM samples from the soundtrack to the SEGA Mega Drive video game *Toejam and Earl: Panic on Funkotron* (SEGA 1993). After the brass crescendo in bar four of the piece the famous 'enemy alert' sound effect from Konami's first instalment *Metal Gear Solid* videogame is used to musical effect (1998). *Toejam and Earl* and *Metal Gear Solid* are not directly referenced in Chang's interview. However, given that Chang states that he deliberately wanted to incorporate pre-existing video game audio, these choices, too, may have mattering significance within his chiptune and video game capital, and may also resonate with that of other listening fans.

Through Chang's creativity, 'Bird World' playfully blends multiple mattering influences from his capital in SNES chiptune and beyond. He very deliberately conflates the mattering relations between the musical citations he conjures which, in turn, inform the ways that other listening fans exercise their meaning-making competencies. 'Sweet, nostalgic and engrossing' writes fan Redacted on Chang's Bandcamp page, alongside Redacted's comment declaring: 'an idea I haven't seen done before but I really want more people to try -

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<sup>115</sup>Available here: <http://picopicose.com/software.html>

an album for a game that doesn't exist, and yet you feel like you looked through your attic and found a dusty copy of a game you played when you were a kid' (2017). The quality of a retro video game that does not exist is stirred by chiptune capital in video games that *do* exist.

Chiptune capital is a continuum that forms as fans become encultured into chiptune and continues to flourish through their subsequent musicking practices (cf. Potter 2013, p. 25). The heterogeneous and fragmented details within its knowledge structures – spanning the fields of chipsound knowledge, contextual knowledge, musical knowledge, and self-knowledge – are all mapped together in relation to their mattering significance. As illustrated by Chang's 'Bird World,' among others, chiptune capital *matters* and it becomes an actant *because* it matters. As it does so, chiptune fans gain the agency to become familiar with where the 'homes' of their fandom are, which might shift day-to-day and moment-by-moment in their mattering significance, as well as gain the literacy competencies to seek out their 'homes,' recognise them, and create them.

# Chapter IV

## Chipsound Timbre: ‘Home’ is Where the Haunt is

[Chiptune is] the sound of nostalgia filtered through the mono speaker of a blurry television from a video game console made over thirty years ago. [Chiptunes] are a look into our own kinder, gentler past with machines and give a new language for the future that will continue to evolve with each generation. (Paul 2014, pp. 507, 525)

The preceding chapters demonstrated the ways in which the ‘homecomings’ of chiptune fandom are mediated by the primary agencies of chip-musical technologies and the PSG remediation strategies they afford, and the literacy enabled by the mattering maps of chiptune capital. This chapter will now explore the third primary mediator of chiptune’s ‘homecomings’: chipsound timbre. As per all chapters in this part of the analytical framework, section 4.1 begins by identifying the agency possessed by the timbral actors of chipsound within chiptune’s inter-objectivity. In this section, it is argued that this agency can be understood as hauntological in its effect: it mediates musicking fans’ perceptions of memory and time. To illustrate this theory, section 4.2 examines the hauntological agency of chipsound timbre – and its importance to the ‘homecomings’ of chiptune fandom – through the case study of chiptune’s seemingly inescapable relationship with nostalgia.

### 4.1 The Agency of Chipsound Timbre: Haunting Waves

What, exactly, do the bit-crushed qualities of chipsound timbres do to their fans to evoke ‘home’ or, perhaps, take them far away into the daydreams of a distant and maybe rose-tinted time? How do chipsound timbres stir the most profound of memories and identifications for some listeners, or perhaps the imbued ‘authenticity’ or ‘rawness’ of chiptune for others?

As established in Chapter 1, while chip-musical technologies and PSGs are at the forefront of chiptune practice in all their remediated guises, it is in its listening experience that chiptune – and all its fannish attachments – comes to life (see Chapter 1, section 1.1). Once sounded, once converted from assembly or hexadecimal code to audio, passed through the headphones of a chiptune fan or through the towering speaker cones at live chiptune events, chipsound actors erupt, temporarily and ephemerally, into the here-and-now of their sounding. As fans listen to chiptune, they encounter these timbral actors in their spectral form, which are



at once present and non-present – on the perpetual cusp of ‘appearing’ (cf. Blake and Van Elferen 2015, p. 62; cf. LaBelle 2018, p. 37; cf. Kramer 2002, p. 279; cf. Chion 1999, p. 22). As they are simultaneously placed and placeless, ephemerally present yet absent, chipsound timbres mark a relation to that which ‘is no longer or not yet;’ it is in the marking of these relations that they mediate the ‘homecoming’ of chiptune fan identifications (cf. Van Elferen 2007, pp. 1-11; Dunn 2007, p. 20; Hägglund 2008, p. 82).

As outlined in Chapter 1, for Blake and Van Elferen the sonic actors of musical actor-networks simultaneously produce two layers of significance: on the one hand, sound is disembodied yet ‘encountered’ by listeners; on the other, sound informs the unavoidable ‘return’ of musical meanings, associations, and cultural imaginaries (2015, pp. 65-8; cf. Schafer 1994, pp. 90-1). The moment a chiptune fan presses ‘play’ – be it on their iPhone, on their MIDI device, Milkytracker, LSDJ, the ‘start’ button on their NES or its emulator, or perhaps as they begin their live performance at a chiptune concert – chipsound timbres emerge through the medial relations of their transmitting agents. The moment the crunch or buzz of chipsound reaches their ears, the chiptune fan might suddenly and all at once experience the ‘homecomings’ of their chiptune fandom across a multitude of mattering connotations. Chipsound actors do so through the fact that – like all music and sound – they unavoidably induce their un/conscious interpretation as they are captured by fans’ ears and felt in their bodies, through which they trigger memory and, thereby, the mattering maps of chiptune capital (cf. Kassabian 2013, pp. xv-xvi; cf. Glennie 2015).

While the meaning of chiptune is attributed by the listening fan through their meaning making competencies, it is the mediatory agency of the timbral actors that *generate* a multitude of potential mattering connotations amongst listening fans, rather than inherently *carry* set meanings. Chipsound timbres have no fixed or underlying meaning outside of their entirely subjective and social-musical relations, for any form of musical meaning is also a fundamentally social construction. To paraphrase Lawrence Kramer, chipsounds ‘do not mean, but precede meaning’ (2002, p. 279).

Building on the case studies presented in Chapter 3, we can observe how specific chipsound qualities can mnemonically trigger a multitude of mattering connotations in the fannish response to a chiptune entitled ‘Melancholy Departure,’ composed on the tracker sequencer DefleMask by a fan under the handle of Redacted .<sup>116</sup> The fannish intention of the

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Redacted

artist is illustrated in both the title of the forum thread on the *DefleMask.com* website, and the sound synthesis methods utilised in the composition.<sup>117</sup> Under a thread titled *Practicing Sonic I Music*, Redacted expresses interest in 16-bit ‘SEGA style FM music’ – which in itself is qualitatively reliant upon the timbral actors mediated by FM synthesis – and wishes to compose in a similar style, particularly in homage to the first SEGA Mega Drive instalment of the *Sonic the Hedgehog* franchise (2016; SEGA 1991). While in no way overtly mimicking Masato Nakamura’s original soundtrack for *Sonic the Hedgehog* in terms of melody, harmony, or rhythm, in terms of timbral actors the FM patches and drum samples distinctly echo the sonic palette of Nakamura’s work.

The tom-tom drums are synthesized by Redacted using frequency modulation, to which they jest that ‘it shows’ (2016). The analytical interest in the claim of ‘it shows’ should not so much focus on Redacted’s admission that they do not possess the relevant chiptune capital to code percussion patches through FM synthesis, but rather that ‘it shows’ refers to the foregrounding of FM’s timbral actors in the attempt to give the impression of tom-tom drums. In other words, the chosen technological constraints that hinder Redacted’s synthesis of tom-toms work in favour of achieving ‘SEGA style FM music’ and its mattering conjurations: it foregrounds and cites SEGA’s own use of FM chips by way of remediation.

Another notable element within the musical actor-network of ‘Melancholy Departure’ is the FM bass patch, which is directly poached: it is the exact chipsound synthesis preset – ‘Electric Bass’ – used in the soundtracks to the first three *Sonic the Hedgehog* games on the SEGA Mega Drive (SEGA 1991; 1992; 1994). *DefleMask*, in fact, offers this patch as an instrument preset in its library for fans to creatively utilise. Once more, we can observe PSG remediation as the lynchpin of chiptune; in this instance, the chosen PSG remediation strategy channels FM chipsounds, bringing with them the potential to trigger a multitude of mattering connotations. If the bass patch in Redacted’s work was in any way different in its synthesis, and therefore chipsound timbre, the listening experience of ‘Melancholy Departure’ would alter through a difference in chiptune inter-objectivity. For some listeners, this alteration may result in disassociation from *Sonic the Hedgehog* altogether and, thus, may dissuade the ‘homecomings’ of other specific identifications as a result.

Curiously, for other participants in Redacted’s thread the FM timbral actors trigger mattering associations beyond *Sonic the Hedgehog*’s immediate frame of reference, which further supports the argument that all chiptune ‘homecomings’ are inherently intertextual in

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117

Redacted

varying degrees (cf. Chapter 3, p. 122). One user – under the handle ‘Redact’ – claims that Solomonster’s piece evokes a SEGA-style remake of ‘a non-existent Depeche Mode song [...]’ (2016). Another user, ‘Redacted’, claims ‘for some reason, it reminds me of Michael Jackson,’ which also refers to the mnemonic and mattering pathways triggered by FM timbre (2016). The Yamaha DX7 synthesizer was used prominently on Jackson’s album ‘Bad’ and its signature FM bass patch on ROM#1A can be heard predominantly driving the track ‘Another Part of Me’ (1987). To the average human ear, the FM mediation of the DX7 is analogous to the FM mediation of the SEGA Mega Drive’s YM2612 chip. For Redacted, their mattering connotations of FM timbre is mapped within and beyond the context of video games; the mattering map from *Sonic the Hedgehog*, to chiptune, to Michael Jackson is triggered by the chipsounds channelled by FM synthesis.

Through ‘Melancholy Departure,’ we can observe how the agency of chipsound actors – FM, in this instance – can trigger a multitude of fannish, mattering associations between different listeners. Yet, as the more outreaching connotations of Depeche Mode and Michael Jackson help to emphasise, chiptune’s emergent identifications – however diverse in their mattering relations – are *always* mediated in relation to the timbral qualities of chipsound. The response of associating ‘Melancholy Departure’ with 1980’s popular music and culture are guided by the mediatory capacities of FM chipsound actors. Therefore, we must emphasise that because chiptune’s fannish identifications are partly reliant on chipsounds, the mattering meanings generated by these actors are also inevitably ‘filtered’ through their mattering connotations. The *kind* of mattering meanings that mnemonically ‘return’ through the agency of chipsound are unavoidably a consequence of hearing sounds that so prominently bear the timbral hallmarks of their constrained and obsolete mediation. It is this triggering of fannish connotations and their ghostly ‘return’ into the present – as though they had never left – which names mediatory capacity of chipsound timbres in the ‘homecomings’ of chiptune fandom (cf. Van Elferen 2012, pp. 11-15). As fans listen to chiptune, an encounter with the past – its technologies, cultures, and memories (lived or imagined) – is then arguably unavoidable.

I love the nostalgia of compositions from 8-bit video games. Pitch bends, single channel quick chord arpeggios, legato note blends, and lo-fi samples all combined to produce classic music have always given me that message that even with the most so called ‘archaic’ technology, a piece of art with an unbreakable legacy can be created that would appeal to a massive group of

gamers or audio enthusiasts. (Survey participant 19, age category 26-35, see appendix, p. 229).

Some journalistic sources on contemporary chiptune practice claim that the genre has outgrown its video game roots and abandoned ‘hanging on to the past’ in favour of a more forward-thinking narrative. Some chiptune fans and chip-musicians, likewise, approach the topic of nostalgia with trepidation (Nova 2014, p. 79). However, as this study emphasises through remediation, it is undeniable that a key element in the ‘homecoming’ of chiptune fan identification is the foregrounding of chipsound timbres – resplendent in their crackly, lo-fi, and obsolete character. Chipsound, by the very nature of its (re)mediation, is undeniably ‘haunted’ (cf. Carlsson 2010, p. 44).

‘Haunted’ in this context does not refer to the paranormal but draws from Jacques Derrida’s concept of ‘hauntology.’ From Derrida’s seminal work *Spectres of Marx*, the concept of ‘hauntology’ – a portmanteau of ‘haunt’ and ‘ontology’ – refers to the return of elements from the past and proposes that *all* concepts are necessarily haunted by pre-existing meanings (2006, pp. 10-1, 20, 102; see Van Elferen 2012, Chapter 1). Hauntology has become something of a buzzword in recent years, primarily through its journalistic use in discussions on the appropriation of outdated or obsolete aesthetics in contemporary music movements. Simon Reynolds is particularly noteworthy for bringing the term to popular attention in his book *Retromania*, especially in relation to the digital sampling of popular music for remix purposes, in which he portrays the ‘cannibalism’ of popular culture as doomed to be stuck in a loop of repetition and stagnation (2011, pp. 311-62).

It should be duly noted, however, that the hauntological capacity of music is not restricted to genres that emphatically ‘recycle,’ sample, or foreground markers of technological obsolescence and the aesthetics of decay. Hauntology, as Van Elferen highlights, is both inherent and paramount to storytelling, and *all* music unavoidably haunts its listeners with pre-existing meanings (2012, pp. 15, 26-33; cf. Donnelly 2005, p. 21). In his writings on hauntology, Mark Fisher also remarks that our experiences of sound are intrinsically hauntological because, when listening, we associatively hear what is not present (2014, p. 120). Furthermore, no two pieces of music haunt in the same way. The same piece of music may haunt separate individuals in very different ways; the same piece of music can even haunt a single individual in different ways over time, as their memory and mattering capital inevitably shift (cf. Van Elferen 2012, pp. 26-33; see Chapter 6 on desire, pp. 199). While *all* music and sound haunt, for a genre that relishes in the constraints of PSG mediation, haunting can be said

to be the very ethos of chiptune as it persists through the ongoing remediation – and conjuration – of its techno-cultural origins (cf. Van Elferen 2012, pp. 5-6).

Whether minimal triangle or piercing pulse waves, the white noise percussion of 8-bit systems, the metallic FM twangs or bit-crushed PCM characteristics of 16-bit systems, or indeed any bit-crushed timbre, chipsound is inextricably linked to the emergence of early PSG technology in the late 20<sup>th</sup> century.<sup>118</sup> Chiptune may have been liberated from its video gaming origins by fannish hands, and its contemporary practitioners need not have been gamers ‘back in the day’ or even now, but it is undeniable that chipsound is haunted by its past. Chiptune very deliberately plays with the ghosts of obsolete technology, the sound of a time and culture markedly different to the technological advancements of the present. Moreover, these ghosts are integral to the ‘homecoming’ of chiptune fan identification.

Through its reliance on its hauntological effects, chiptune is then hauntographical in its practice. ‘Hauntography’ is a term coined by Van Elferen, which describes the deliberate and self-aware practice of hypermediacy to remind the audience member of the medium, as well as to channel the hauntological effects of said medium (2012, pp. 15-18). Music technologies are hauntographical, as they ‘[distort] the spectral voices [they] communicate’ (*Ibid*, p. 16). Building on Chapter 2’s concept of PSG remediation and Chapter 3’s concepts of chiptune capital and literacy, hauntography helps to bridge further the relationship between chip-musical technologies and PSG remediation, chiptune capital and the mattering competencies of chiptune literacy, and the chipsound timbres of ‘home.’ The ways in which chiptune fans exercise their access and operation competencies can be considered hauntography by definition. These decisions take place un/consciously, as argued in Chapter 3, but fans perform their chiptune literacy competency of access and operation in order to haunt themselves with specific mattering connotations (cf. pp. 93-6). This can also include the ‘homecoming’ of nostalgia, as fan Redacted writes in the *OverClocked Remix* forums when displaying their work: ‘I used chiptune because I was aiming for nostalgia’ (2016).<sup>119</sup>

Following the logic of mediation, different forms of technology – whether a pencil or a piano – have different hauntographical and thereby hauntological capacities (Van Elferen 2012, p. 16). This is also true of chip-musical technologies and PSG remediation strategies,

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<sup>118</sup> In fact, chiptune is tied to all early digital music technologies that emerged in the early 1980s – such as the Fairlight CMI, the Yamaha DX7, or the Linn Drum – which is why chipsound not only haunts with chiptune and video game associations, but can also haunt listeners with associations of popular music and culture of the period (as per above on ‘Melancholy Departure’)

<sup>119</sup>

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and the ways in which each will accordingly engender different ‘homecomings’ and mattering connotations. FM synthesis possesses a very different hauntography to that of 8-bit subtractive synthesis, for example. As we also saw in Chapter 3 in the ‘Gloria’ case study, some fans can even recognise the hauntographical nuances between a hardware PSG and an emulation of the very same model, as though the audio equivalent of tracing the calligraphy of two subtly differing signatures. The focus here is not on the ‘authenticities’ of hardware versus emulation – as stated previously – but the deliberate foregrounding of PSG constraints as a creative choice, giving way to chipsound spectres of a time distinctly ‘other’ than the here and now of the 21<sup>st</sup> century.

The differences between chiptune hauntographies can also be observed in the affordances of the tracker sequencer DefleMask, which emulates a multitude of PSG hauntographies from Commodore 64 SID to the Yamaha chips of SEGA arcade cabinets. A particularly interesting process to highlight here is the ‘change system function:’ pre-composition, a user may switch between different PSG mediations – whichever may suit their mattering notions at the time of play. However, if code material already exists in the project, then selecting this function transforms the synthesis patches to that of a different system while retaining the existing code. Having said this, if ‘downsizing’ a system – for example going from the 6 channels of SEGA Mega Drive FM to the 3 channels of the Commodore 64 SID – then some code material may be lost in the process due to channel reduction, resulting in a bare and minimal remnant of the pre-existing piece. However, the code in the remaining channels is voiced through a different hauntography: where before sounded by FM synthesis patches, the remaining code is distributed among the SID’s subtractive synthesis waves, creating a very different hauntological effect. Switching between hauntographical methods is not the same as simply changing a font in a word processor, but rather altering the very narrative of the piece itself.

Intertextual chiptune creativity sees the playful conflation of multiple hauntographical practices. If we recall Chang’s ‘Bird World’ from Chapter 3, for example, the deliberate and self-aware choices Chang makes by emulating SNES PCM mediation, and his contextual play through the musical use of video game audio samples, give way to the hauntological conjuration of a video game that does not exist. Chang’s ‘Bird World’ is an excellent example of chiptune as a hauntographical play of remediation and fannish capital: the deliberate channel for the mattering ghosts of chiptune to emerge, as well as also the ‘homecomings’ of video games, music and popular culture, personal memories, and perhaps nostalgia.

The 2015 album ‘Chiptune Memories’ by the group She is another notable example of chiptune intertextuality that plays with multiple hauntographical sound sources. With a title that alone evokes the ghosts of chiptune’s techno-cultural past, ‘Chiptune Memories’ utilises the hauntographies of the Nintendo Game Boy, SEGA Megadrive FM, NES 2A03, and Commodore 64 SID.<sup>120</sup> In addition, specific synth bass patches and drum samples are lifted directly from such games as *Sonic the Hedgehog II*, and with it too the hauntology of this game and its associations through the spectral actors of FM patches and bit-crushed drums (SEGA 1992).

In addition to the deliberate use of PSG remediation strategies as hauntological agents, She also use the Casio SK-1, the Yamaha DX7, and the OSC OSCar synthesizers on ‘Chiptune Memories,’ further conflating the presence and definition of analogue and digital, historical accuracy and memory. While the OSC OSCar is a blend of digital oscillators and analogue filters, just like chipsound the purely digital SK-1 and DX7 have strong cultural associations with the 1980s. Especially the DX7, now something of a hauntological ‘black box’ of the era, with its 32 factory preset patches having since become an audible effigy of electronic and rock music of the period. The ‘Chiptune Memories’ that She evoke through their mixture of PSG mediation with 1980s synthesizers present the listener with a complex, hauntological conflation of mattering ghosts from video games and popular (music) culture.

In play, chiptune brings the ghosts of the past into the present; its (sub)cultural history and technological obsolescence oozes through its mediation like a sonic form of ‘ventriloquism’ (cf. Blake and Van Elferen 2015, pp. 62, 64). Through its simultaneous channelling of mattering sentiments and the sounds of past into the present, through which they become intertwined, the hauntological agency of chipsound timbres then not only evoke mattering memories, but also profoundly mediates the listener’s perception of time.<sup>121</sup> Given its hauntological power, the simultaneous manipulation of memory and time are poignant for the fannish enjoyment of chiptune. Chipsound timbres both re/awaken pre-existing fannish identifications as well as give the impression that these identifications are recoverable, accessible, immanent and, therefore, it evokes these sentiments by hauntologically destabilising perspectives of history and temporal linearity.

The hauntological and hauntographical elements of chiptune invite us to readdress the much-overlooked relationship between chiptune fandom and nostalgia. Rather than arguing as

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<sup>120</sup> As revealed here: <http://www.shemusic.org/chiptune/>

<sup>121</sup> See further on musical time in the work of Jonathan Kramer (1988, pp. 1-57).

to whether or not chiptune can be definitively labelled as nostalgic in its contemporary practice – as many journalistic approaches continue to speculate – it would be much more fruitful to consider how the case study of nostalgia can help us to illustrate the hauntological mediation of the listener’s mnemonic and temporal perceptions by chipsound timbre (see Introduction, pp. 25-8). To establish this point, the following subsection will now explore how the hauntological mediation of memory and temporality are key elements to the experience of nostalgia in all its potential manifestations (cf. Kalilina 2016, p. 5329).

#### ***4.1.1 Hauntology and nostalgia: mediated memory and disjointed temporality***

During the empirical research for this study, the following comment from a young chiptune artist came to my attention for its relation to nostalgia and the hauntology of chipsound timbre:

I am a 13-year-old chiptune maker. This [Soundcloud link given in original comment] is my new single. I LOVE to make 8-bit tunes. They remind me of NES and Game Boy days! Enjoy. (Initially posted in 2014, see screenshot in appendix, p. 227)

This comment initially appeared in the comment section of *YouTube* a video containing a compilation of 8-bit chiptunes, which has since been removed from the site due to possible copyright infringements. Although this video and Soundcloud account have since been removed, when analysing chiptune under the lens of hauntology this fannish remark becomes an intriguing one. Being 13 years old at the time of writing this comment – too young to have experienced what they describe as the ‘days’ of the NES and Game Boy first-hand – how can this individual ‘remember’ them through 8-bit chipsound timbres, and what does this reveal about the relationship between nostalgia, chipsound’s hauntological capacity, and the ‘homecomings’ of chiptune fandom?

Such fannish claims often provoke a question that provides a useful entry point into understanding the link between hauntology, nostalgia, memory and time: can we experience nostalgia for times and places we have never known but seem to vaguely remember or ‘experience’ through media and the imagination? To put it succinctly: yes. Through hauntological agents, such experiences are entirely possible. Moreover, virtually experiencing and yearning for imagined times and places we have never known, and which may never have



existed, is nostalgia *par excellence*.<sup>122</sup> Nostalgia ‘conjures a [desired time], and thus paradoxically transcends history itself by way of memory’ (Van Elferen 2012, p. 148; Hutcheon 2000, pp. 189-207; Huyssen 2000, p. 27).

Nostalgia’s relationship to history, therefore, is *always* one of perversion, sanitisation, and transformation (Van Elferen 2007, pp. 4-5; Niemeyer 2014, pp. 3-5; Hoskins 2014, p. 122). Nostalgia need not rely on the anchors of ‘lived experience’ of the past, as it is entirely possible, for example, to even feel nostalgic for fictional times and places, and feel nostalgic for (sub)cultural movements of the past with which we may have no first-hand experience (see Goetz 2018, pp. 55-80; see also Appadurai 1996 on ‘ersatz nostalgia,’ p. 82). Through media consumption, we can virtually experience alternate temporal relations – acting as our very own vehicles or ‘time machines,’ which operate through the intersection of memory and imagination (see Makai 2018, pp. 158-72; cf. Schrey 2014, p. 29). Technologically mediated nostalgia forms the catalyst for the (re)production of memory unrestricted to historical ‘accuracy’ (Niemeyer 2014, pp. 3-5).

In relation to memory, Fisher notes that the power of hauntology lies in the possibility of being haunted by non-existent events (2014, p. 107). A haunting may mark a relation to what once was, and subsequently what is no more or yet to come, but it can also mark that which never was or failed to be – as we saw in the case of ‘Bird World.’ For an overt example of the hauntological potency of chipsound timbres, we can once again consider intertextual chiptunes – specifically, remixes and cover versions. The case study of NPonlinemusic’s 8-bit arrangement of ‘Magician’s Domain,’ for example (2010). ‘Magician’s Domain’ is an in-game piece for the SEGA Mega Drive video game *Mickey Mouse and Donald Duck: World of Illusion*, composed by Haruyo Oguro Tomoko Sasaki (1992).<sup>123</sup><sup>124</sup> NPonlinemusic hauntographically ‘downsizes’ the original from a 16-bit chiptune aesthetic to 8-bit, which playfully mediates mattering memory and temporality in two ways: first, it evokes an 8-bit port of *World of Illusion* that never existed; second, this conjuration displaces the chronology of video game history and context, through which 8-bit *Magician’s Domain* inserts itself as existing before, or alongside, the 16-bit original.<sup>125</sup> This, paradoxically, makes the newly remediated 8-bit artefact sound more anachronistic through its subtractive synthesis

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<sup>122</sup> (See also Chris Healy 2006 on ‘compensatory nostalgia,’ pp. 221-34).

<sup>123</sup> NPonlinemusic’s 8-bit cover can be heard here: <https://www.youtube.com/watch?v=FyGpdHmfUVg>

<sup>124</sup> Sasaki’s Original 16-bit version can be heard here: <https://www.youtube.com/watch?v=Hy2KhrdXs0w>

<sup>125</sup> A ‘port’ of a video game refers to the adaptation and recreation of a pre-existing video game to a different hardware. This will often result in alterations in graphics and sound.

arrangement than the FM arrangement of 16-bit original in a playfully self-aware hauntographical practice (cf. Fisher 2014, p. 14; Van Elferen 2012, pp. 15-7, 29-33).

The hauntographical intention of the piece is evident in NPonlinemusic's own description of their work: 'remember playing this game on your Game Gear or Game Boy Colour? Me neither, but it should look and sound something like this' (2010). The hauntologically nostalgic potency of the chiptune remix lies in its deliberate play on memory, fandom, and history. Although more apparent in chiptune remixes, all forms of PSG remediation distort and conflate fragments of the past through memory, and our temporal relationship to them.

Pierre Nora contends that history is recorded as fixedly chronological, factual, and utilitarian; memory, on the other hand, is sporadic and operates through sentiment and desire (1996, pp. 7-24). Our minds do not function with video camera efficiency; recollection, however wistful or 'certain,' emphasises desired elements and often obfuscates others as irrelevant or upsetting (Potts 2014, p. 218; see Bridge and Voss 2014, pp. 2203-6). Memory is, for Fisher, susceptible to continual gaps and revisions, and that external non/human agencies can just as much become the 'authors' of our memory – the perpetrator of gaps and revisions – regardless of how we may illusorily claim to have sole responsibility in their construction and recollection (2016, p. 72). For fans, media may serve as an 'extension of the self,' but it only occupies this mantle through its ability to become an 'author' of memory (see Introduction, p. 22; Christopher 2014, pp. 207-8). In addition to profoundly destabilising our perception of temporality, the hauntological agency of musical technologies, music and sound itself can powerfully distort, supplant, rewrite and blur memory in a process tied to its mediation.

Memories are fragile and membranous: they are socially formed and therefore can be blurred between multiple imaginaries via external agencies (Holl 2014, p. 167; Van Dijck 2007, pp. 1-2, 27; cf. Bridge and Voss 2014, pp. 2203-13; cf. Snyder 2000, p. 235). On this premise, José van Dijck has observed how media can help us to cultivate 'memory objects,' which 'mediate' memory through sporadically triggering, shaping, and distorting its pathways and connotations (2007, pp. xii, 1, 19, 21-36). Van Dijck is careful to point out that memory is not entirely at the mercy of mediation via the external agency of media; rather, resonating with Blake and Van Elferen's approach and the mediatory interactions that take place within musical actor-networks, she claims memory and media 'transform one another.' She writes:

Mediated memories are the activities and objects we produce and appropriate by means of media technologies, for creating and re-creating a sense of past, present, and future of ourselves in relation to others. [Mediated] memories are not static objects or repositories but dynamic relationships that evolve along two axes: a horizontal axis expressing relational identity and a vertical axis articulating time. Neither is immobile; memories move back and forth between the personal and the collective, and they travel up and down between past and future. (*Ibid*, pp. 21-22)

While mediated memories are guided by individual and social mattering views, the ‘memory object’ functions through the non-human agencies of its makeup. Our approach to nostalgia, media, and memory must therefore likewise move beyond a solely anthropocentric lens and into the consideration of how non-human actors in media can mediate our perceptions of time and memory.

Memories might consist of deeply personal associations; we may experience ‘homecomings’ of specific autobiographical events but, at the same time, that which triggers our memories may draw us into new areas of re-inscribed significance and imagination. *Mediated* memory then, as used in the context of this study and in relation to chiptune nostalgia, describes how memories are not just triggered but also coloured, distorted, and manipulated by the agencies at work in the makeup of – in Van Dijck’s terminology – the memory object. When a person encounters the memory object – perhaps family photographs – they may re-encounter the mattering touch stones of their connotations; at the same time, the memory and imagination of the individual are drawn down new vistas of reflection. These vistas distort and transform as much as they re-present; they mythologise the past as much as they recall it, and part of this effect takes place through the hauntological capacities of their makeup.

These photographs may have also succumbed to decay, visual markers that signify where the photograph and its captured subject(s) sit in time (Doane 2007, pp. 128-35; cf. Eno in Auner 2000, p. 2). These markers, whether staining, tears, watermarks, fading or creases are non-human actors that engender their own forms of hauntological agency: they mediate and thus actively alter the experience of the photograph. Here, the markers of decay render visible temporal relations, which channel the mythologising effect of viewing photographs from the past. We may recognise the subjects in the photos, perhaps our grandparents, and may experience the resurgence of their mattering significance. Yet, the decay of the photo creates a distance: its subjects become intertwined with the visual signifiers of deterioration, producing

a ‘homecoming’ that flourishes through the tension of a simultaneous familiarity and a newly mediated reflective distance. The power of the memory object is likewise garnered through hauntology. Through interaction with memory objects, our memories perpetually ‘float free’ of pre-existing historical context by way of their hauntological resurgence and conflation (cf. Christopher 2014, p. 204).

In the age of remediation, however, the hauntological capacity of decaying or obsolete aesthetics need not rely on the development of temporal markers over a long period of time. Remediation can accelerate decay by foregrounding the effects of mediation, which emphasises the capacity to be haunted by events that never took place (cf. Boym 2007 on nostalgia and technology, p. 10). As Bartholeyns illuminates, photo editing apps that mimic cine cameras and instamatic models afford access to the ‘instant past.’ smart phones can take a clearly defined and high-quality photo in the present, and through such apps we can simulate decay and alter its temporal positioning (2014, pp. 51-61). The photo app remediates the hauntological agency of the analogue camera with ‘digital strength.’ it accelerates and emphasises the mediation of analogue photography and the ageing of the printed photo (Sapio 2014 pp. 45-6; see also Schrey 2014 pp. 32-6). Yet the digital format freezes the decay in binary information, preserving the non-existent analogue photo from further disintegration. Dominik Schrey deems the result to be a form of ‘analogue nostalgia.’ an aesthetic response to a remediated artefact from a past that never existed, the mythologisation of a photographed subject, their time and place – regardless of whether the source is digitally mediated or not (2014, pp. 27-36; see also Rombes 2009, pp. 152-6).

Remediated markers of time and decay create wholly new narratives and are, moreover, sought after. In the case study of analogue remediation, these markers indicate the ‘soul’ of analogue, its ‘authenticity’ and affection in juxtaposition to the often ‘soulless’ clarity and machinic perfection of digital processing (Schrey 2014, pp. 35-6). The digital remediation of analogue aesthetics would then call technologically deterministic approaches to nostalgia into question; digital remediation can *produce* analogue nostalgia and nostalgic aesthetics can be deliberately grafted into creativity.<sup>126</sup> The past – and even the future – becomes an aesthetic experience and for this reason it has been extensively argued that media can induce nostalgia for any audience through the mnemonic mediation enacted by appropriated aesthetics (Bartholeyns 2014, p. 65).

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<sup>126</sup> As can be observed in the plethora of available VSTs that mimic tape saturation and vinyl crackles.

As a hauntographical practice, then, PSG remediation does not capture or recreate the past, but creatively and hauntologically re-invents it (cf. Sontag 1979, p. 67; cf. Taruskin 1995, pp. 237, 265). PSG remediation strategies are the channel through which fan memories and perceptions of time are invited down the vectors of altered temporality in varying degrees. This process is partly shaped by fans' own mattering associations and self-narratives, and by the other non/human agencies of the remediated aesthetics they encounter. Moreover, PSG remediation strategies involve the continual reinvention of the past and its aesthetic formulae which, in relation to memory, provides an on-going process of memory (re)construction very deliberately undertaken in the pursuit of identification and fandom *through* nostalgia (cf. Van Dijk 2007, 37-8). As a part of the social-realities of media narratives, memory is at once mediated and destabilised: simultaneously revisiting the mattering avenues of 'homecoming' familiarity and refracted along the side-streets of 'what if?' (cf. Boym 2001, p. xvii).

Through its mediation of memory, the hauntological agency of chipsound also mediates nostalgia by the tension it evokes through temporal displacement. Through the agency of chipsound to mediate memory, the listening fan is caught within the tension of the past being hauntologically recalled into the present. In addition to the manipulation of memory, this tension is where nostalgia fosters its poignancy. As Linda Hutcheon has argued, the 'power' of nostalgia's emotional impact arises through irretrievability and inaccessibility (2000, p. 189). Our experience of nostalgia, she continues, is one of simultaneous distance and proximity; 'nostalgia exiles us from the present as it brings the imagined past near' (*Ibid*, p. 191). Maël Guesdon and Philippe Le Guern also define nostalgia as an apex of simultaneous 'vanishing and [returning]' which strongly adheres to the haunting capacity of the spectre (2014, p. 78).

The relation between the spectre and nostalgia flourishes in the permanent ambiguity of the spectre's simultaneous presence and absence, or 'confirmation and denial' (Derrida 2006, p. 116; Blake and Van Elferen 2015, p. 65). Nostalgia, as the in-between of near and far, of vanishing and return, arises through a hauntological blur between history, memory, time and space: we are captured in the apprehension of distance and proximity, at once home *and* abroad, and subsequently 'nowhere' (Boym 2001, pp. xiii-xiv; Van Elferen 2012, p. 12). This tension between distance and proximity is captured by Barbara Cassin's contention that nostalgia circulates 'rootedness and up-rootedness' (2016, pp. 7, 29). Like Hutcheon, Cassin theorises nostalgia as simultaneous familiarity and distance: a 'homecoming' that is always just in reach, on the cusp of fully appearing, on the horizon, but *always* deferred. 'Odysseus returning has not yet returned, and this 'not yet' is, to my eyes, precisely the time of nostalgia' (*Ibid*, pp. 1,

22). Rootedness and up-rootedness adhere to the temporal displacements of mediated memory and temporality: as simultaneously recollective (rooted in familiarity) and transgressive (uprooted and transformed external mediatory agencies). In the ‘not yet’ position of up/rootedness, we experience the liminality of nostalgia as a simultaneous and superimposed ‘near’ yet ‘far’ or, as Cassin elaborates, simultaneous *Heimweh* (homesickness) and *Fernweh* (farsickness) (*Ibid*, p. 24).

Nostalgic aesthetics are affectively and viscerally ‘felt’ and materially manifest, but their original contexts or manifestations are never fully, physically, or identically ‘brought back’ (Hutcheon 2000, p. 191; see Chapter 5 on affect, p. 152). The ‘stable’ or fulfilled ‘homecoming’ of nostalgic media is impossible, but this impossibility is the crux of its experiential qualities (cf. Boym 2007, p. 9). The ‘home’ of nostalgia resides in an obfuscated horizon. If nostalgia’s vision of ‘home’ were to be fully realised, then the seduction of its ‘imaginative geography’ would be lost (cf. Chard 1999, p. 10; Boym 2001, pp. xiii-xiv). According to psychiatrist David Werman, satisfying nostalgia’s yearning would result in the ‘demythologisation of elsewhere: [the] attained object is not what it promised to be’ (1977, p. 391).

Christopher Goetz argues that our response to nostalgia’s mnemonic and temporal tensions can be understood through Bachelard’s notions of ‘vertical reading’ and ‘rêverie’ (Goetz 2018, pp. 60-7, 70; Bachelard 2014, p. 14; 1964, pp. 14-5). Bachelard describes ‘vertical reading’ as the point at which an inaccessible world is glimpsed; through the tension of this inaccessibility, the chronological progression of a linear narrative halts and the perceiver is invited to daydream (2014, p. 162). ‘Rêverie’ describes that which takes place at such points of destabilisation. Bachelard’s definition of rêverie describes a contemplative mode of focus, on an object at the ‘centre’ of the rêverie, which then triggers ‘beams’ that stretch outward through mnemonic and imaginative pathways of association and wayward fantasy (1964, pp. 14-5). These ‘beams’ spread out in a star like pattern, and flow through continual departure and arrival between the centred ‘object’ and its connotations (*Ibid*). For Bachelard, rêverie is the simultaneous holding to an object and projection of these interconnecting beams; he uses the scenario of sitting in front of a fire, which ‘links the small to the great, the hearth to the volcano, the life of the log to the life of a world’ (*Ibid*, p. 16; cf. Tonelli and ‘imagined mobility’ in Chapter 1, pp. 49-64).

Goetz goes on to argue that rêverie shares a kinship with nostalgia by way of its tension-inducing effect upon our perception of mnemonic and temporal alterations (2018, pp. 62-3, 70). Nostalgic aesthetics are akin to what Bachelard might have considered the ‘central object.’

While the notion of an object or central focus is problematic in relation to the agency of sound, we can consider that every sonic utterance, every hauntological event, is a new ‘spark’ for the mediation of memory and the axes of time-space (cf. Blake and Van Elferen 2015, p. 67). These mnemonic sparks can potentially flourish into an infinite web of mattering connotations, as opposed to the defined shape of a star (see Chapter 5 on affect, p. 152). Yet by that same motion, these connotations build on from pre-existing mattering strands. Just like Bachelard’s *rêverie*, nostalgia simultaneously holds to the mnemonically familiar and distorts mattering connotations through the imagination. Nostalgia’s relationship to hauntology thus lies in the essential tension of its double gesture, that of a ‘repetition that is also transformation’ (Dunn 2007, pp. 19, 23).

Nostalgia, like the longing of *rêverie*, is ‘time out of time,’ a hauntologically superimposed tension between ‘home and abroad, past and present, dream and everyday life’ (Goetz 2018, p. 70). Nostalgia forms ‘[places] that can host dreams and imagination’ (cf. Fantin 2014, p. 102). Unsatisfied by fully actualising its projected time-space, nostalgia finds meaning in *itself* – in the tension of its hauntological up/rootedness – thriving in the simultaneous immanence and distance of its subject matter: a fantasy between the voyage and the ‘homecoming’ return that might never have taken place (Van Elferen 2007, p. 4; see Werman 1977, pp. 391-3).

#### 4.2 Chipsound and Nostalgia: Mediated Memory and Temporal Tension

Wonderful song. It reminds me of just being carried away by the wind over blue skies, fresh air and green grass. I love it. Gives me such a nostalgic feel with the SEGA Genesis-esque vibe I get from the melody. ( Redacted )<sup>127</sup>

Ah the nostalgia... Atari, C64, NES, even Amiga 500... the good ol’ days when SID chips and 8-bit ruled. There’s just something so timeless and classic about these sounds and tunes that they instantly transport you to another era, when video games were the newest craze, *The Goonies* movie ruled, and arcades were everywhere to be found. Deep down I think every synth player is a closet 8-bit

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<sup>127</sup>

Redacted

video game aficionado in some shape or form... at least, that's the way it is for me. Keep the chiptunes coming! ( Redacted )<sup>128</sup>

We can now understand that chiptune's nostalgic responses are the result of chipsound timbre's mediation of both mnemonic recall and temporal distance, as a hauntological superimposition of up/rootedness. 'Rootedness' in the context of chiptune fandom, echoing Cassin's use of the term, is the familiarity and mattering sentiments that chiptune evokes in its listeners (cf. 2016, p. 29; cf. Chapter 3 on chiptune capital, pp. 99-103). Rootedness might include the use of chipsound to affirm and maintain the semi-stability of fannish identity, the 'homecoming' of fannish meaning and the familiarity of genre tropes. These rooted elements, however, are primarily achieved by remediating music-technological elements and cultural imaginaries of the past. Therefore, the rooted elements of chiptune fandom are necessarily mediated through the hauntological agency of chipsound timbre: their 'homecomings' are always mnemonically and chronologically dislocated.

Chipsound timbres produce chiptune's hauntological double gesture through uprooting the past and superimposing it into the present, but always at an unreachable distance. The listener becomes enmeshed in an up/rooted blur of mnemonic familiarity and temporal estrangement. As forms of 'homecoming,' chiptune nostalgia in part yearns for the rootedness of a homecoming that is, paradoxically, engendered through uprooted-ness. The nostalgic drive towards chiptune would then reveal chipsound agency to be a means of revelling in the liminality of 'homecoming:' yearning *for* the rêverie of nostalgia, not the satisfaction of the fulfilled 'return' (cf. Fenty 2008 on video game nostalgia, p. 23).

Whether fans aim to re-spark the magic of chipsound and childhood fascination, or a fantasy of transgressing the present, both are the self-induced result of chipsound-mediated memory and are, furthermore, enamoured by the rêverie of hauntology (cf. Boym 2001, p. 242). Restorative elements of mattering significance may be brought into the present and viscerally experienced, but always through a reflective, hauntologically propelled superimposition of 'homeliness' and distance, or up/rootedness. Each time a fan remembers through chiptune – or even yearns to remember a past they never knew or that never came to be – every chipsound encounter induces the hauntological tension of a 're-remembering that is also a dismembering' through its mediatory agency (cf. Rose 1991, p. 91). Inevitably, whether

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128

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chiptune nostalgia is self-induced or involuntary, listeners are immersed in the nostalgic flow of chiptune and its mediated ‘internal logic’ (see Kalilina 2016, pp. 5327, 5338-9; Lizardi 2015, pp. i, 24, 137-41). This internal logic consists of a musically mediated, and thus destabilised, temporal coherence and linearity where, hauntologically, memory is at once recalled and transformed.

The hauntography of PSG remediation can then be understood as a fannish a means of self-inducing the liminal ‘homecoming’ of nostalgia through the continual rewriting, or reinventing, of memory and the transgression of history. Through the regenerative processes of remediation strategies, furthermore, chiptune fans can self-induce and ‘feed’ the liminality of nostalgia beyond exhaustion (cf. Hutcheon 2000, p. 191). By drawing from the elements or ‘formulae’ of the past like a creative well, PSG remediation hauntologically re/creates ‘a multitude of [temporal] potentialities [and] non-teleological possibilities’ (cf. Boym 2001, p. 242). These possibilities, or what Voegelin might consider as chipsound timbre’s ‘sonic possibilia,’ open up hauntologically constructed musical fictions with their own laws (cf. 2014, p. 102). In relation to fannish experience of chiptune, the hauntological capacity of chipsound can potently mediate a mattering-defined rêverie evoked through the hauntological displacement of pre-existing meanings (cf. Niemeyer 2014, p. 2). A comment left by a fan under Redacted on the *YouTube* upload of chip-musician Darkman007’s piece ‘Sad Song’ helps to capture this hauntological up/rootedness between mattering significance and mnemonic and temporal destabilisation:

This tune fills me with such emotion. Like longing to return to a place I’ve never actually been with a powerful sense of unknown nostalgia. I can feel and see it like some distant childhood memory or even one from another life. Giving me a strong desire of wanting to search for it. A mixture of sadness, joy and melancholy. Almost like getting high off a dream. (2019)<sup>129</sup>

The hauntological double gesture and essential tension of chiptune nostalgia can also be illustrated through the testimony of survey participant 36, whose words reflects the argument above:

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129

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[The] games I played as a child made an absurdly strong impression on me. As I write this, I have blue hair because of *Mega Man*, I'm wearing a *Shovel Knight* t-shirt (spiritual successor to *Mega Man*), drinking from a *Mega Man* mug, and my desk and entire office is replete with *Mega Man* and other video game paraphernalia. Yet, I don't consider myself a 'gamer' because I don't have much time at all to play, and I've no experience with most modern titles. But being able to listen to OSTs and new compositions while working or doing other activities lets me feel those vibes without having to play or otherwise try to recreate those times. (Age category 36-45, see appendix, p. 229)

Participant 36's fannish response reveals a number of mattering connotations – such as the *Mega Man* series of video games – but chiptune – and 8-bit chipsound specifically, as they state in their survey response – is the means through which the emotional investments of all these homecomings are interconnected and conflated. What participant 36 fannishly describes as the 'vibes' of the past and of their fandom adheres to the rêverie-like response of memory objects and nostalgic aesthetics. Rather like the outreaching pathways of rêverie, chipsound acts as the hauntological agent that binds together these 'homecoming' traces and brings them into the forefront of the 'now.'

Like the function of Van Dijck's memory object, for participant 36 chiptune becomes a means of identification by means of hauntological conjuration without any desire to return to the past. Instead, the mediatory agency of chipsound timbre is a means for participant 36 to take fannish roots with them, to hauntologically keep in touch with them through their chip-musical conjuration – a means to trace them continually through the ongoing renewal of mnemonic pathways and temporal distortion (see 8-bit Reggae in Chapter 6, pp. 190-99). As argued above, the hauntological apex created by chipsound timbres evoke a sense of up/rootedness: a kind of 'homecoming travel' without moving, in which the capacity of chipsound timbres to blur the significance of the past into the present has mnemonically brought back the 'rootedness' of the familiar, but simultaneously generates the 'uprooted-ness' of the temporal distance from this significance.

As is also the case for survey participant 72's sense of the 'homecoming' connection with their deceased father, for participant 36 the up/rootedness of chiptune brings with it the emotional potency of chipsound nostalgia in an almost overwhelming intensity. As participant 36 goes on to say further about their relationship with chiptune and memory:

Interacting musically with these same machines now brings back the feelings from those special times. There are Mega Man tracks that pretty much make me cry, and even thinking/writing about it now my eyes are becoming moist. (See appendix, p. 229).

Fannish ‘homecoming’ takes place and gains its emotional poignancy as a result of up/rootedness, because chiptune’s signature sound – the ghosts of PSG obsolescence – simultaneously marks a temporal relation to what once was yet brings it back through the liminal rêverie of a new haunting. For participant no. 36, chipsound’s hauntological tension of the unfulfilled return, as stated in theory above, finds meaning in itself as a ‘homecoming’ and a creative outlet. The times that participant 36 describes remain special because they are unobtainable, they are enamoured through distance, and thereby they avoid demythologisation. It is in this sense that the nostalgia prevalent throughout chiptune fandom can become a compelling vector for keeping in touch with and tracing one’s fandom and fan identity (cf. Wilson 2005, p. 5).

Chipsound timbre then acts as a potent mnemonic and nostalgic device, a means of hauntologically ‘cordoning off time’ to reflect upon it, to alter, to reimagine and even play with it through the rêverie of an impossible voyage (Bartholeyns 2014, p. 67; Goetz 2018, p. 75). Like the digitally aged photograph, the hauntography of PSG remediation renders the ghostly temporal markers of chipsound’s obsolete characteristics, and thus nostalgia, audible and palpable in their wake. Chipsound timbre, as the third primary non-human mediator of chiptune’s ‘homecomings,’ affords a virtual re-presentation of the past in which fans participate and ascribe their own mattering elements (cf. Tonelli 2014, pp. 412-8; cf. Van Elferen 2012, pp. 5-6). The past may be unrepeatable, but chipsound’s manipulation of memory and time afford a tantalising hauntological glimpse of it for *any* potential listener. In this glimpse, the past becomes a transformative fannish playground in which listeners at any time and place can inscribe individual and social memory, chiptune capital, and in which they can explore in rêverie.

#### ***4.2.1 Chipsound nostalgia and ‘authenticity’***

No filters, no extensive timbre features, just the most basic of waveforms. Chipmusic is so pure and authentic. (Survey participant 33, age category 26-35, see appendix, p. 229)

There's a certain brutal simplicity to 8-bit sound which is hard to resist, and I like the sound of technology straining to create a certain sound and not quite making it there. (Survey participant 35, age category 36-45, see appendix, p. 229)

Chiptune's 'homecomings' of 'authenticity,' 'legitimacy' and 'purity' can also be understood as the result of chipsound timbre's hauntological agency, and a form of nostalgic 'homecoming.' While perhaps not as playfully wistful as the *rêverie* of a fantasised past, 'authenticity' nostalgias establish the firm belief that practices of the past afford a greater sense of craftsmanship, or return to 'authentic' roots, through the upkeep of technological constraints (see Peterson 2005, pp. 1083-98; see 8-bit reggae in Chapter 6, pp. 190-9). This quality of chiptune 'homecoming' becomes nostalgic through the mythological appropriation of obsolete practices as 'authentic' and, potentially, of greater artistic merit than more advanced music technologies. Yet even this conviction is reliant on hauntological agents; as fannish testimonials revealed, owning PSG hardware is itself not the primary calling card for chiptune 'authenticity' (see Polymeropoulou 2014).

This craftsmanship is sonically foregrounded through the hauntography and hauntology of chiptune: voices must be 'micro,' audio samples must have the timbral qualities of sampling aliases as they struggle against DAC or PCM limitations, telephone chords must reveal broken and fragmented harmonic colour as they strain against the limitations of their monophonic voicing. Moreover, through foregrounding these actors, the chiptune fan can experience a nostalgia which, as Lowenthal has argued on the subject of 'authenticity,' is the result of craving 'evidence that the ['authenticity' of the] past endures in a recoverable form' (1985, p. 14). Recovering the past, however, is impossible. Even chiptune's nostalgia for 'authenticity' is thereby subject to mediated memory and the temporal tension of an unfulfilled return by way of non-human, hauntological agencies.

The 'authentic' values and practices of chiptune take on a mythological aura: they hauntologically 'occur in the present as having occurred [or as appearing to have occurred] in a former time' (Bartholeyns 2014, p. 54; cf. Baudrillard 1996, p. 75; cf. Benjamin 2008, pp. 14-31). However, through the hauntography of PSG remediation and the hauntology of its effects, this 'authenticity' resonates from a time that never existed. Paradoxically, then (and like all nostalgia), the enjoyment of chiptune as a 'legitimate' or 'authentic' practice can involve a nostalgia for that which is fundamentally irretrievable: the 'authentic' sameness of

an ‘original’ value or practice that only exists within a socially defined fantasy and, through remediation, is always subject to hauntological perversion, transformation, and revision (cf. Van Elferen 2012, p. 27).

#### 4.2.2 Chiptune: ‘home’ is where the haunt is

The music of home, whether a rustic cantilena or a pop song, is the permanent accompaniment of nostalgia [...]. (Boym 2001, p. 42)

Chiptune is defined by PSG constraints, by limitation and obsolescence; chipsound timbres *always* bring with them reworkings of time, memory, and fandom. Hauntologically mediated memories and temporal destabilisations pervade throughout all forms of chiptune’s fannish identifications – and any form of music fandom, for that matter. We can now understand, however, that the primary mediator of chipsound timbres function as hauntological agents for the mnemonic and mattering aspects of chiptune ‘homecomings’ and, specifically, that their mediatory capacities can engender nostalgic feelings in varying degrees among chiptune fans. Chip-musical technologies and PSG remediation strategies, as hauntographical, let the ghosts of chiptune out to play (cf. Van Elferen and Weinstock 2016, p. 63). As a hauntological channel, chiptune’s remedial practices do not pertain to Reynold’s notion of being ‘stuck’ in a cultural loop or stagnation. On the contrary, the hauntological agency of chipsound produces a superimposition of the familiar within and through the playfully new and the unknown (cf. Van Elferen 2012, pp. 2-17). While chiptune must be haunted by its technological context, the creative ‘repetitions’ of chiptune are subject to continual displacement, distortion and always produced anew (see also Chapter 5 on ludomusicality, p. 152).

Curiously, however, it is *through* the estrangement and temporal displacement of PSG remediation, through newly channelled musical actor relations, that the chipsound spectre re-emerges and haunts the listener with pre-existing, mattering connotations.<sup>130</sup> We can also understand, then, exactly how the non-human mediator of chipsound timbre is crucial to the ‘homecomings’ of chiptune fandom through its reworkings of memory and its distortions of temporality. Chiptune’s overlay of the familiar *within* the new more acutely captures the hauntological capacity of chipsound, rather than the stagnant repetition of the same. While on

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<sup>130</sup> (Cf. Kramer 2002 on Derrida, pp. 263-4)

the surface PSG remediation may become a device to mnemonically channel the ‘same’ mattering connotations, they are never fully repeated, and never *quite* the same.

As one of the primary non-human mediators of chiptune listening experience, it is also the hauntological capacity of chipsound timbre that allows nostalgia to become potentially accessible for all listeners as a form of identification. Whether chiptune nostalgia involuntarily invites the Proustian melancholy for lost time, a self-induced means of playful rêverie, ‘authenticity,’ or indeed all these attributes, all nostalgic identifications and experiences of chiptune are united through the up/rooting tension of memory and the liminality of musical time.<sup>131</sup> Whether nostalgia is openly embraced or not, whether fans revel in it or shun it, the hauntology of chipsound timbre is both essential and inevitable. Its hauntological effect escapes being anchored to a specific generation of fans, and in fact forms an important element to the fannish participation within chiptune fandom. Regardless of the fannishly ascribed narrative, or whether this narrative involves an experience of nostalgia, the ‘home’ of chiptune is, undoubtedly, where the haunt is (cf. Fisher 2014, p. 125).

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<sup>131</sup> (Cf. Proust 1992, pp. 60-5).

## **Part III:**

### **The Ludomusical Shaping of Chiptune Fan Identity**

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## **Chapter V**

### **Chiptune Ludomusicality**

The preceding three chapters in this study have identified the agencies of chiptune's primary mediators – chip-musical technologies, chiptune fans, and chipsound timbres – and explored the ways in which each of these agencies mediate the emergent qualities of chiptune actor-networks. With these mediatory agencies now separately identified, this chapter now enters the third part of the theoretical framework and explores how these mediators musically interact with one another to engender the 'homecomings' of chiptune fandom.

Section 5.1 begins by introducing affect as the lynchpin of musical interaction and music fandom, and then outlines four key concepts from affect theory: affect as potential, affective encounters and affective events, affective traces, and affective bodies. These four concepts are used to enhance the insights of Latourian ANT – in particular, the understanding of how non/human actors co-mediate the inter-objectivity of emergent social realities – which will in turn help us to analytically grasp the musical interactions that occur between chiptune's primary mediators.

Sections 5.2 and 5.3 then contextualise and adapt these four concepts for use in the analysis of musical-actor networks. To do so, section 5.2 draws from Moseley's work on ludomusicality, which explores the ways in which music becomes playful and play becomes musical between non/humans (2016, pp. 1-7). Through the combined lenses of affect theory and ludomusicality, this section traces the ways in which the 'homecomings' of chiptune fandom – as social-musical realities – emerge as chiptune plays, and as the agencies of chiptune's primary mediators ludomusically play together. Building on this point, section 5.3 draws attention to the fact that the affectivity of ludomusicality can leave residual traces of its vitality in the non/human bodies of its participants which, in turn, alter the potential of these bodies to participate in future ludomusical interactions. This section then begins to consider the relationship between the 'homecomings' of chiptune fandom, the residual affectivity of ludomusicality, and chiptune fan identity, which will lead into the final chapter.

## 5.1 Be Still my Bleeping Heart: Chiptune, Fandom, and Affect

I grew up in isolation. Wide open spaces devoid of life [...]. Having gone to many places and being welcome in none of them, my friends were made of pixels and my emotions became coloured in their image. The way I heard and *felt* things inside myself *formed* in digital blips and bleeps, and so [chiptune] became my heartbeat. It fills me with the tender innocence of *pure feeling* [...] and makes me *feel* as if there is a way for me to *truly* be understood and *convey* what it has been like to live my life [...]. ( Redacted 2014, emphasis added)

Above is a forum post<sup>132</sup> made by a fan under the handle of Redacted in the forums of *Chipmusic.org*.<sup>133</sup> The post is made in response to the topic ‘what do you like about chip music?’ and Redacted’s description of their chiptune fandom is certainly among the more impassioned answers to the question. While many similar responses have been shown throughout this thesis so far, Redacted’s heartbeat analogy is a fitting way to introduce the focus of this chapter.

We have seen how chip-musicking forms the ‘heart’ of chiptune fan identity: the main source of its fannish identifications (see Chapter 1, section 1.1), and we now understand the primary mediators of these qualities, like the mechanics that are integral to the function of this heart (Chapter 2; Chapter 3; Chapter 4). The next thing to investigate is what makes this heart ‘beat’ as fans begin their chip-musicking and, specifically, how this vitality is essential to the emergent ‘homecomings’ of chiptune fandom. To that end, this first section sets out to grasp what this ‘vitality’ is by proposing we can analyse the interactions that take place within chiptune actor-networks through the lens of affect.

### 5.1.1 Chiptune and affect

Perhaps the most everyday understanding that people have of affect comes from music [...]. In an encounter with [music] there are moments of unspeakable,

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<sup>133</sup> *Chipmusic.org* is a popular communal hub for chiptune fans. Like many such sites, it offers forum space for chiptune fans to discuss their likes and dislikes, have access to learning resources and make tutorial requests, and upload their own chiptune compositions for constructive criticism.



unlocatable sensation that regularly occur: something outside of (beyond, alongside, before, between, etc.) words [...] why do certain pop songs reshape our surroundings, sometimes literally altering our sense of the immediate landscape and the passage of time itself? (Seigworth 2003, p. 85)

Affect can be described as a mobilising ‘intensity,’ and it is integral to *any* form of musical interaction, immersion, and experience (Massumi 2002, pp. 22-7; Van Elferen 2016, pp. 34-5). Affect includes the ways in which music envelops us, motivates us, changes our perceptions and our feelings (cf. Donnelly 2005, pp. 13, 172). Musical affect arouses our corporeal reactions, such as goose bumps, or the ways in which we might dance and perform; affect can stir, shape, and contour our memories, it can awaken and intensify our fleeting emotional reactions, and guide our musical connotations and identifications (Jarman 2013, p. 203; cf. Biddle 2013, p. 207; cf. Thompson and Biddle 2013, pp. 5, 7, 11; cf. Van Elferen 2016, pp. 34-5; cf. Vila 2017, pp. 3-7). Musical affect is that which so profoundly moves, energises or revitalises us, seizes our hearts and imaginations, and creates ripples throughout our lives. For these reasons, affect is both integral to how we experience and identify with music and a key factor in the longevity of our music fandom (cf. Duffett 2013, pp. 124-5, 134-41; Duffett 2014, p. 6; Hills 2014, pp. 14, 19-20).

The same is true of chiptune fandom. As participant 55 in my survey states: ‘there’s a certain *something* about the purity of a square wave, and the particular tone of a 120bpm [arpeggio]’ (age category 36-45, emphasis added, see appendix, p. 229). In a discussion on the chipsound qualities of Commodore’s Amiga and 64 computers, YouTuber Redacted writes: ‘Amiga [chiptune] is good but there’s *something* about the sound of the [Commodore 64] SID that seems more enduring... Maybe it’s nostalgia’ (2020, emphasis added).<sup>134</sup> This was also the case for the ‘homecoming’ of Bit Shifter’s experiences with chiptune, who described a special and ungraspable certain *something* about the ‘primitive’ qualities of chipsound synthesis (see initially in Chapter 1, p. 56). That special *something* these fans try to capture is the result of affect.

The presence of affect in chiptune is also why, like many fans, Redacted is so passionately attached to it, and why chipsound timbres have become such a lynchpin in their life and a staple of their musical activities. It is the affect of chiptune’s technologies, bleeps

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134

and bleeps that produces their ‘vibes,’ conjures the spellbinding ‘power’ behind their ‘little’ sounds that endear their listeners, and why chiptune continues to resonate so profoundly with fannish senses of self and belonging. The affect of chiptune, and chipsound timbre specifically, is why it so vividly haunts its listeners with connotations and identifications, makes the ‘past’ so palpable yet so unreachable, and amplifies the fannish convictions of what matters, and ‘authenticity’ (Chapter 4, section 4.2; cf. Thompson and Biddle 2013, p. 17). The ways in which chiptune fans dance to bit-crushed beats, trigger samples and manipulate hexadecimal codes on their tracker sequencers, and the actions through which chip-musicians bring performance arenas to life, are also affective. Yet, as discussed in the Introduction of this study, there is a distinction here between the term ‘affect’ and the emotions, connotations, ‘authenticities,’ nostalgia, and so forth that this study captures through the term ‘homecoming’ (see p. 28).

In this chapter, ‘affect’ is as defined by studies associated with the ‘affective turn’ in the humanities, which is largely attributed to the seminal works of Brian Massumi and furthered by Melissa Gregg and Gregory Seigworth’s collection of essays on affect theory (Massumi 1995, pp. 83-109; Massumi 2002, pp. 22-7; Gregg and Seigworth 2010, pp. 1-18).<sup>135</sup> Affect theory largely explores the ‘how’ of bodily experiences, the reception and understanding of information and aesthetic qualities, the development of cultures, etc., as opposed to the ‘what’ (Massumi 2002, p. 27; cf. Gregg and Seigworth 2010, p. 14; cf. Thompson and Biddle 2013, pp. 6, 16). Akin to Latour, Massumi argues that focusing on what a culture ‘is’ – i.e., its ‘essence’ or its ‘nature’ – obfuscates the importance of the ways in which these qualities are produced: of *how* the non/human elements that comprise and mediate a culture, and the affective *passages* and *processes* of change and transformation between them, are vital to its emergence and its longevity (Massumi 2002, p. 12; cf. Latour in Chapter 1, pp. 65-70). It is here that affect theory becomes relevant to chiptune actor-networks.

‘Homecoming,’ as Chapter 1 argued, describes ‘what’ fans experience through chip-musicking in relation to their fan identities. Chapters 2, 3, and 4 then explored ‘which’ mediatory non/human and non/musical actors and agencies are integral to the qualities of chiptune’s ‘homecomings,’ and what they do. On the basis of affect theory, ‘affect’ now refers to the ‘how’ – the ‘homecoming’ process – as chip-musical technologies, chiptune fans and their capital fuelled competencies, and chipsound timbres musically interact with one another.

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<sup>135</sup> A movement that explores the complexities of events and experiences that cannot be explained through frameworks of linguistics or representation (cf. Clough 2007, pp. 1-3).

There are four concepts from affect theory that can help explain how this occurs: affect as potential, affective encounters and events, affective traces, and affective bodies. In the next subsection, these concepts are outlined with the aim of enriching three important aspects of ANT's analytical framework. First, affect theory can help us understand how actor-networks form; second, affect theory can help us understand how non/human mediators interact and inter-objectively network with one another; and third, affect theory can also shed light on how changes, qualities, and social realities emerge through networks of non/human interactions (see Sage, Vitry, and Dainty 2019; cf. Latour 1999, pp. 22-30; cf. Müller and Schurr 2016, pp. 224-5).

### ***5.1.2 Affect as potential, affective encounters and events, affective traces, and affective bodies***

Affect theory is founded on Baruch Spinoza's concepts of *affectus* and *affectio*; the former, *affectus*, is the potential of a body to affect and to be affected, or, for a body to make changes and be changed by other bodies (Spinoza 2001, pp. 45-6, 96-116; Massumi 2002, pp. 15-6; Gregg and Seigworth, 'An Inventory of Shimmers'; Thompson and Biddle 2013, pp. 6-8).<sup>136</sup> Affect does not refer to an object, a state, or a personal feeling (cf. Massumi 1995, p. 88). Affect is *relational* and always in motion: it refers to the potential ways in which bodies can interact with one another, and the ways in which these interactions can produce transformations and emergent effects (*Ibid.* pp. 87-105; Gregg and Seigworth 2010, pp. 1-6; Bertelsen and Murphie 2010, p. 145; Bennett 2010, pp. xi-xiv; Deleuze and Guattari 2013, p. xv; Thompson and Biddle 2013, p. 7).

Twinned with *affectus*, Spinoza's *affectio* (affection) refers to the affective encounters between non/human and or in/corporeal bodies (Spinoza 2001, pp. 45-6, 96-116; Bennett 2015, pp. 95-6; cf. Deleuze 2017, pp. 4-6). Affective encounters can be understood as catalytical: they refer to the pre-conscious transition between states and responses, through which 'forces,' 'intensities,' 'energies,' or 'vibrations' transfer *between* bodies as they interact with one

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<sup>136</sup> Much like Latour's use of the term 'actor,' the use of the term 'body' in affect theory is unrestricted to human corporeality; non-human, in/organic, im/mobile, and part-organic bodies also possess the capacity to affect and be affected (Gregg and Seigworth 2010, pp. 1, 6). 'Body,' in this context, also adheres to Latour's use of the term 'actant:' as either an ensemble of non/humans that collectively form a 'thing' or 'whole,' or in reference to abstractions, such as the mind, cultural values, or ideals of 'authenticity,' these too have the potential to affect and to be affected (Massumi 2002, p. 5; Gregg and Seigworth 2010, pp. 1-3; Deleuze and Guattari 2013, p. xv; Bennett 2010, 'The Agency of Assemblages').

another (Massumi 2002, pp. 15-6; Gregg and Seigworth 2010, ‘An Inventory of Shimmers;’ Bennett 2010, pp. 21-2; Thompson and Biddle 2013, pp. 6-8).<sup>137</sup>

We can think of simple affective encounters that can take place within the household. The interaction between a match and a striker is an affective encounter, through which the affective event of fire is catalysed. Why is fire an *affective* event? Because neither the bodies of match nor striker can create fire on their own. Both match and striker possess the affective *potential* to create sparks or burn. However, the emergence of fire relies on the chance encounter *between* the bodies and agencies of the match and the striker, as well as those of oxygen and the motion of the human hand, whose transferal of energy and vibration as they come into contact (affection) will hopefully co-produce the ignition of flame (cf. Bennett 2010, pp. 21-2, 31-2, 34). The competency of the human striking the match plays a key role in instigating this encounter, but it is important to account for the fact that there is an affective agency or ‘power’ within the non-humans of the match, striker, and oxygen, whose mergence are integral to the efficacy of fire (cf. Bennett 2010, pp. 31-2).

The intensities and forces of affective encounters are fleeting, and the events that emerge through these encounters are, likewise, potentially short-lived, or reliant on the duration of the encounter. However, as Spinoza points out: ‘[a body] can undergo many changes and nevertheless retain impressions or traces of objects it has interacted with’ (2001, p. 51). Affective encounters can leave traces, or residues and impressions, on the bodies involved, which can in turn alter – perhaps empower or diminish – that body’s capacity to affect and be affected (Watkins 2010, pp. 269-70; Cole 2005, pp. 7-9; cf. Deleuze and Guattari 2013, pp. xv, 257). For a visual example, the striker retains a mark of its encounter with the match; the match retains the scorch marks of its encounter with the flame. Visual marks aside, the traces and impressions left on the striker by the match, and by the fire on the match, have altered the capacity of these bodies to affect and be affected. The encounter with the match dulls the striker’s abrasive surface; the fire has exhausted the phosphoric fuel of the match tip and the wood of the match body. Yet, the burnt-out match has gained a new potential through the affective traces of the fire: it now has the *potential* to score paper with its charcoal surface, for instance.

Both the relational nature of non/human affects and their traces apply to human experiences, even if these are more complex, dynamic, non-universal and unpredictable than

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<sup>137</sup> However, the use of the term ‘force’ to describe affect can be misleading; affect is present in, and can be traced through, the most banal and gradual, unnoticeable and subtle, to the most profound, the most sudden, and the most traumatic of daily encounters (Gregg and Siegworth 2010, pp. 1-3; Thompson and Biddle 2013, p. 6).

the chance of creating fire (cf. Spinoza 2001, p. 163). Emotions, for instance, are affective events that emerge through the intensities of our non/human affective encounters (Massumi 1995, pp. 88-94; Massumi 2002, pp. 27-8; Gregg and Siegworth 2010, pp. 1, 3).<sup>138</sup> Emotions are therefore not affect ‘in itself’ (Gregg and Siegworth 2010, pp. 1-3). Rather, they are how we subjectively ‘capture’ affective intensities on and within our bodies – which might then involuntarily emerge into such events as shivers, tears, an increase in heartrate, or goose bumps – to which we retroactively affix experiential qualities and meanings (Schrimshaw 2013, p. 31; Massumi 1995, pp. 86-105; Massumi 2002, pp. 28, 35, 131-4; Watkins 2010, p. 278; cf. Bennett 2010, pp. 34; cf. Trigg 2017, p. 11).

Emotions are also evidence of the residues, traces and impressions left on us by the capture of affective encounters (Shaviro 2010, p. 3). The affective encounters through which emotive responses emerge are fleeting, contingent, and as affective events, emotions are transitory. Our capture of their intensities within our body and the meanings we may attribute to them are what we remember, what sticks to us (see Ahmed 2010, pp. 29-30). These impressions may include how we remember moments of joy, sadness, nostalgia, fascination, pain, how our bodies felt in these moments, and we can also recall the particulars of the encounter we captured, such as the other non/human and in/corporeal bodies were involved.

Just as the encounter with the flame alters the body of the match, we too are changed by the intensities of affective encounters. Kassabian argues that the residues left behind by affect accrete ‘in our bodies, becoming the stuff of future affective responses’ (2013, p. xiii). Megan Watkins’ work specifically explores the relationship between our ability to interact with and understand the world, and how this ability develops through affective encounters (2010, ‘Desiring Recognition, Accumulating Affect’). Watkins contends that traces of the numerous and simultaneous affective stimuli we encounter daily can accumulate in the bodies of our reflex or muscle memory, biographical memory and knowledge bases, predominantly in ways that might evade our consciousness (*Ibid.*, pp. 278-80).

These traces are charged with affective potential. Their accumulation in our bodies – as knowledge, as physical marks, as the co-acting cognitive and muscle ability to play the piano, for instance – thereby alter how we are motivated to act within, and process, future encounters and relations: our potential to affect and to be affected (see Chapter 6, pp. 184-99).

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<sup>138</sup> Some of our daily affective encounters with other non/humans can involve seeing, smelling, *listening*, tasting, and touching, all of which can occur simultaneously and can co-produce emergent responses and events. Affective encounters and events are not solely bodily but also cerebral, they can un/consciously involve our imagination, our desires, memories, thoughts and ideas (Trigg 2017, p. 11; cf. Deleuze 2017, p. 4).

Watkins thus observes in general how affect is an integral dimension of pedagogy – as both the developer and trigger of recognition – as well as how we develop our senses of self (2010, pp. 269-78, 84; see Chapter 6, section 6.1). On this point she cites Edward Reed: ‘becoming a self is something one cannot do on one’s own; it is an *intensely social* process’ (1995, p. 431, emphasis added). In the context of Watkins’ work, the ‘social’ refers to the relational nature of affect, and the ways in which the development of our identities, and our familiarity with the world, relies on affective encounters with other non/humans (2010, p. 284).

Due to affect’s relational nature, a large focus of affect theory studies how bodies can affectively to broader networks of social relations, potentially crossing boundaries and blurring distinctions – such as human/non-human, mind/body/the ‘outside’ world, ‘reality’ and ‘fantasy,’ or between in/part/organic matter – in the process (Massumi 2002, pp. 35, 133; Gregg and Siegworth 2010, pp. 1-3; Bennett 2010, p. 24; see Leys 2011, pp. 434-472; Trigg 2017, p. 11). Affect is a ‘webbed,’ contingent or ‘sticky’ agency, as Sara Ahmed describes: ‘affect is what sticks, or what sustains or preserves the connection between ideas, values, and objects’ (2010, pp. 29-30).<sup>139</sup> Unlike a ‘sticky’ substance, however, affect is not something that congeals and sets – it is in constant flow (cf. Cole 2005, pp. 5-9; Kassabian 2013, p. xxvii).

The networked aspect of affect rather aligns with Latour’s notion that ‘[if] you stop making and remaking groups, you stop having groups’ (2005, p. 34). Social realities are held together through continual inter/actions and sustained affective encounters (cf. Massumi 2002, p. 217). It is affect which brings together non/human networks in the first place, and which emerges through their interactions (cf. Sage, Vitry, and Dainty 2019). Affect’s role within actor-networks is then like an animated mycelium: it interconnects and binds relations between bodies, but these bonds are re/generative: they might also spread further into new relations within, between, and beyond the network’s bodies, and towards broader networks of relations and events (Massumi 2002, pp. 26-32; Gregg and Siegworth 2010, ‘An Inventory of Shimmers;’ Thompson and Biddle 2013, p. 7; Bennett 2015, pp. 95-6; Trigg 2017, p. 11).

On this point, we come to the concept of affective bodies. The concept of affective bodies features prominently in the work of Jane Bennett, which gives important insights into the non/human and networked aspects of affect (2010). For Bennett, affective bodies refer to how all bodies – non/part/human and in/corporeal – are themselves are composed and organised by networks of other affective bodies (*Ibid.*, pp. viii, 21, 32, 117; cf. Deleuze 1988,

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<sup>139</sup> In the context of fandom in general, Joanne Garde-Hansen and Kristyn Gorton similarly describe the role of affect as ‘[A] collective energy that initiates and sustains gatherings of people and ideas’ (2013, p. 33). Affect is the *conduit* between fans, texts, and communities (cf. Kohnen 2018, p. 339, emphasis added).

p. 98; Deleuze 2017, p. 6; see also in Sage, Vitry, and Dainty 2019). On this premise, she explores how non/human affective encounters and networks are integral to the very formation, affective capacity, vitality and persistence of all bodies (Bennett 2010, 'Preface').

To do so, Bennett draws on Spinoza's concept of '*conatus*' (Spinoza 2001, p. 4; Bennett 2010, pp. xi-xiv, p. 2). *Conatus* is the 'active impulsion' harboured by every non/human body to strive and persevere in its existence, yet this impulsion does not refer to consciousness or even sentience (Bennett 2010, pp. 1-2, 22, 31-2, 62-81; Matthews 2003, p. 48). Bennett argues that, through their *conatus*, all bodies are 'vibrant materials:' they have a curious 'life' or vitality of their own through their very existence, they are animated (*animata*), and this vitality charges them with the potential to affect and be affected (Bennett 2010, pp. 4-6, 20, 57; cf. Spinoza 2001, p. 4, 92). Every atom in the Universe quivers with this vital force, a *conatus*, as they strive to persist through their ongoing vibrations (Bennett 2010, pp. 17, 56-9). These vibrations are affective: they are receptive to the vibrations of other atoms, and they have the power to affect, create, and maintain bonds with other atoms, whose encounters and co-vibrations might produce new affective events as well as formulate and hold larger bodies together.

*Conatus* also refers to how some bodies persist – are held together – by forming an 'alliance' with the affective capacities of other bodies, and/or maintaining the pre-existing affective relations that define and enhance their vitality (Bennett 2010, pp. 1-2, 22; Bennett 2015, p. 96; cf. Deleuze 1992, pp. 229-30). To do so, affective bodies operate *in* or *as* heterogeneous 'assemblages,' which Bennett describes in a way that enriches Latour's use of the term 'actor-network:'

Assemblages are ad hoc groupings [...] of vibrant materials of all sorts. Assemblages are living, throbbing confederations that are able to function [as a whole] despite the persistent presence of energies that confound them from within [...]. The effects generated by an assemblage are [emergent] properties, emergent in that their ability to make something happen [...] is distinct from the sum of the vital force of each materiality considered alone. Each [member] of the assemblage has a certain vital force, but there is also an effectivity proper to

the grouping as such: the agency [or vitality] of the assemblage. (2010, pp. 22-4, emphasis in original)<sup>140</sup>

The human body, for instance, operates as a whole with its own vitality and affective capacity. Yet the human body itself is a mosaic assemblage of non-human bodies, all affecting and being affected. Our body's ability to function, and the vitality with which it does so, relies on the *conatus* of our cells, muscle tissue, organs, nerves, bones, intestinal bacteria, and so on (Wong 2015, p. 9). In this sense, we are vibrant materials composed of non-human vibrant materials (Bennett 2015, p. 94). Our emergent qualities and abilities, our vitality, our health and our disposition, however, are not just affected by organic or concrete vibrant materials, nor the *conatus* of the materials that compose our bodies. The affective bodies of our memories, intentions, and unconscious also factor into our vitality, in addition to all manner of other external factors, such as pets, cultural practices, or the actants of law, or the very air we breathe.<sup>141</sup> All of these factors potentially co-produce the vitality that can, literally, start a heartbeat and keep it beating.

Our *conatus* is not some mystical 'life force,' but rather the affective power that emerges and circulates within assemblages of non/human vibrant materialities, which can potentially collide with, conjoin, enhance, compete, or harm 'the vibrant materialities we are' (*Ibid.*, pp. 94-5). This drive occurs continuously and unconsciously in varying speeds and intensities; *all* bodies – human and otherwise – are continually and involuntarily affecting and being affected, however gradual or imperceptible to humans these encounters may be (*Ibid.*, pp. 21, 55, 57-8; cf. Deleuze and Guattari 2013, pp. 9-29). We only capture the emergent vitality that may arise through these ongoing affects as events or moments of happiness and well-being, as anxiety, or pain.

Just as Latour describes the continual re/making of networks and social realities, the vitality of assemblages and their emergent events are reliant on continual affective intervention, so as to maintain their relations and compensate for the affections inflicted by other bodies (Bennett 2010, p. 22). Assemblages, therefore, are continually 'becoming.' 'Becoming' in this context is a Deleuzian term that describes the process of change or modulation in the makeup

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<sup>140</sup> This term stems from the philosophy and works of Gilles Deleuze and Felix Guattari (see 2013; see also DeLanda 2016, pp. 10-1, 25-8, 38).

<sup>141</sup> As an example, Bennett describes how the vitality of her writing emerges through an assemblage that consists of the vibrant materials of her body and mind, as well as the bird song emanating through her window, the plastic of her computer keyboard, her glasses, and the particles of air circulating in her room (Bennett 2010, p. 22). In this case, the vital materials of Bennett's body formed part of a greater assemblage of affective relations, which in turn enhanced the vitality and efficacy with which she becomes able to write.



of an assemblage, through which new unities, effects, qualities, and energies emerge (Deleuze and Guattari 2013b, pp. 2-4, 134, 357; see also DeLanda 2016, pp. 10-1).<sup>142</sup> Affect is integral to the process of ‘becoming;’ it is the power and intensity that can draw in, hold there, modulate, dispel, repel, and dissipate the bodies within an assemblage (Gregg and Siegworth 2010, p. 3). Given the relational nature of affect, all ‘becoming’ is then a ‘becoming *with*,’ or becoming active *in relation to*, other affective bodies through their encounter (Haraway 2008, p. 244). As we interact with other non/humans – food and drink, art, or long-lost relatives – we form new assemblages with them, we become *with* them as we affectively encounter their vibrant materials, just as they encounter ours (see Bennett 2015 on art encounters, pp. 3-11).

*Conatus* can thus involve the cultivation of what are deemed positive affective encounters that enhance our vitality, and a drive to evade, transform, or destroy potentially harmful ones (cf. Deleuze 1992, p. 243). In other words, the affective force of a body’s *conatus* can drive it towards, or actively repel, encounters with other bodies (Bennett 2010, pp. 20-34). While Bennett stresses the importance of recognising *conatus* as something that occurs beyond human perception and consciousness, humans and some animals are able to become aware of how encounters with other affective bodies may enhance or diminish their vitality (Deleuze 2017, p. 5; Sage, Vitry, and Dainty 2019; see further in Chapter 6, pp. 180-4).

## 5.2 Chiptune Ludomusicality

‘[In] everything that pertains to music we find ourselves in the play-sphere  
[...].’ (Huizinga 2014, p. 164)

Ludomusicality refers to the relationship between play and music – how music comes alive through play, how music becomes playful and play becomes musical – and is a main focus in Moseley’s work *Keys to Play: Music as a Ludic Medium from Apollo to Nintendo* (2016, pp. 1-15; cf. Huizinga 2014, p. 158). Moseley does not utilise affect theory, nor does he discuss music fandom. His definition of ludomusicality does, however, share many parallels with affect as a potential shared by non/human and non/musical elements, and as a transformative in-between that opens between musical play and emergent (musical) events (cf. Moseley 2016, pp. 15-6). In addition, the context of Moseley’s work provides a useful template to explore the affective inter/actions through which affect emerges and circulates within chiptune actor-

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<sup>142</sup> From here onwards, the use of the term ‘becoming’ in the Deleuzian sense will include quotation marks.

networks and, prominently, between chiptune's primary mediators. In the following subsections, affect theory is combined with Moseley's concepts to investigate the how chiptune fan identifications are formed and experienced.

### ***5.2.1 Chiptune and ludomusical potential***

[Music] is not merely the outcome of certain types of play, but constitutes a set of cognitive, technological, and social resources for playing in and with the world through the medium of sound, its mechanisms, and representations. Play, in term, becomes the means by which such musical behaviour is made audible. [Play] activates music via patterns of actions that can be defined as *ludomusical*. (Moseley 2016, p. 16, emphasis in original)

For Moseley, 'ludomusicality' – a portmanteau of 'ludo' (to play) and 'musicality' – defines the ability to perform any kind of ludic (playful) action, behaviour, or manoeuvre that manipulates, in *any* capacity, how music is played and played with, and thereby experienced (*Ibid.*, pp. 15-6). Just as Small's musicking captures taking part in music in any capacity, the actions through which fans musically engage with chiptune – *any* actions – can be considered as ludomusical in Moseley's definition of the term, in that they not just make chiptune audible, but manipulate how chiptune is played and played *with*.

Chapter 3 argued that chiptune capital allows fans to mediate their chip-musicking practices through three forms of literacy competencies. These competencies were access and operation, through which fans remediate specific PSG qualities, chipsound synthesis qualities, and chipmusic by way of chip-musical technologies; interpretation, through which fans are able to attribute mattering meanings and recognise specific chipsound characteristics; and creativity, through which fans exercise their chip-musicianship (see pp. 122-9). Within these broad and intersecting categories, there are a number of ways in which chiptune fans become ludomusical.

Ludomusicality refers to the remedial manoeuvres of chip-musicianship: the dynamics of how fans perform and improvise chiptune, the choices fans make as they compose, how fans might depress both musical and alpha/numerical keys, arrange phrases of hexadecimal bytes, blips and beats, or trigger bit-crushed samples by way of MIDI devices and video game joysticks (cf. Moseley 2016, p. 15; see also Collins 2013, pp. 14-5). Ludomusicality is also unrestricted to chip-musicianship. Fans also press 'play' to listen to

chiptune on their devices of choice, be they iPhones, on *YouTube*, on the *OverClocked ReMix* website, or perhaps tracker sequencers, as well as operate other controls on these interfaces in relation to musical volume, navigation, how they might want to repeat or loop musical tracks and arrange them in playlists.

Ludomusicality extends to the competency of interpretation, and the playful musical actions through which chiptune fans engage with one another, attempt to mediate their moods, and haunt themselves with the familiarity of memories and belongings (Moseley 2016, pp. 15-6, 18; cf. Pufall and Pufall 2008, pp. 390-2). As we have seen through chiptune intertextuality, chiptune fans creatively play *with* music, sound, culture and meaning as they playfully juxtapose all manner of pre-existing musical meanings and cultural contexts (cf. Hahn 2007, p. 14). Chiptune's relationship with nostalgia is ludomusical through its play with the hauntology of individual and cultural memory, fantasy, notions of 'authenticity,' and with technologies that are tied to a particular era or cultural movement (see Chapter 4, p. 148).

While these examples foreground the ways in which chiptune fans are musically playful and the kind of actions they may perform, ludomusicality – as the ability to manipulate how music is played and played with – is not exclusive to human agency. Moreover, *playing* music and being musically *playful* are likewise both relational and contingent (Moseley 2016, p. 16). Play, in any form or context, emerges through the foundations of resources and pre-existing rules or parameters, and the same is true of musical play (cf. Huizinga 2014, pp. 159-64; Rice 1994, p. 4). Musical play relies on the combined ludomusical efforts of non/humans, be they instruments, ideas and themes, scores, key signatures, DAWs, conductors, and so on. Thereby, according to Moseley, musical play is – in any musical context – an inherently social process.<sup>143</sup> For musical play to take place – for music to be conceived, made audible and performed – both human *and* non-human ludomusicality needs to *encounter* one another through what Moseley terms a 'ludomusical field' (2016, pp. 2, 37). This insight is where we can begin to see how chiptune becomes both ludomusical *and* affective.

'Ludomusical fields' refer to the technologies that enable musical play to take place in any given scenario. (cf. *Ibid.*, pp. 1, 6, 16-7). Different formats and scales of ludomusical fields afford different potentials for musical play to take place, different ways for non/humans to interact with one another, and different avenues for musical play to unfurl. Ludomusical fields can refer to the components and affordances of a single musical interface, or a larger network of interconnected musical interfaces and performance spaces geared to specific modes of

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<sup>143</sup> Although Latour's definition of 'social' is not cited here.

musical performance, creativity, and listening. While a ludomusical field refers to the affordances of musical apparatus, its playful potential is defined by *both* human and non-human ludomusicality.

Non-human ludomusicality is informed by the ways in which the non-human components and parameters present within a given ludomusical field afford musical play through their mediatory agencies (cf. *Ibid.*). The parameters of singular musical interfaces, for example, might include the range of musical keys on an acoustic piano and the tuning of its strings, the memory banks and performance modes of a digital keyboard, the skins of percussive instruments that we can strike with our hands or with beaters, or the frequency responses of microphones (cf. *Ibid.*, pp. 1-2). Larger scales of ludomusical fields might include musical scenarios that involve a network of multiple interfaces, such as musical instruments, FX pedals, amplifiers, a mixing desk, a DAW, and monitor speakers. While operated and played by human actors, every one of these interfaces and components possesses their own ludomusicality. They, too, are capable of musical play, as they perform ludomusical actions that manipulate music, sound, human listeners and performers (see further in section 5.2.2).

Human ludomusicality is un/consciously informed by our own capital and our musical competencies, as well as our present mood, and the intentions with which we wish to play music and be playful *with* music (Moseley 2016, p. 6). These factors influence how we might choose our instruments or music technologies, how we might exercise our competencies as we play and operate them, how we might play with other listeners and musicians, and how we might experience and respond to musical play as it takes place.

Moseley's concepts of non/human ludomusicality and the ludomusical field can enrich Chapter 2's insights into chip-musical technologies and PSG remediation. PSG remediation – which can involve all strategies of transparent immediacy, hypermediacy, and retrograde remediation – is not just a case of establishing the conditions to make chipsound audible. PSG remediation strategies – in all their many and varied routes and formats – can now be understood as procuring the means for fans to play, and play with, chiptune. The chip-musical technologies through which these strategies are enacted can be understood as ludomusical fields.

Chiptune's ludomusical fields also form on different scales depending on the remediation scenario. They might consist of the interfaces and components of a single piece of chip-musical technology – a chiptune playlist on a smartphone, a chipsound VST, an LSDJ cartridge – or the affordances of broader chip-musical setups – studio environments both professional and domestic, or live chiptune settings that might include Commodore 64s, a live

audio mixer, and video game joysticks. The potential for chip-musical play to take place is also defined by non/human and non/musical ludomusicality which, focusing on PSG remediation processes for the time being, involves the primary mediators of chip-musical technologies and chiptune fans.

In the context of this chapter, the mediatory capacities of chip-musical technologies can be understood as a form of non-human ludomusicality. Constrained though they are, chip-musical technologies afford vast potential for fans to play and play with chiptune. In the case of chip-musicianship, this potential is partly defined by the ludomusicality of chipsound oscillators, volume, filter, and ADSR controls, white noise or PCM percussion, or the ability of chip-musical technologies to connect with other (ludo)musical devices. Even the seemingly basic LCD screen, A and B buttons and directional pad of a Game Boy are examples of technological parameters that are charged with ludomusical potential.

The capacity for chiptune fans to mediate the ‘homecomings’ of their fandom is also a form of ludomusicality. Their human ludomusicality is defined by their intentions, their present mood, and every detail within the chipsound, contextual, musical, and personal knowledge structures of their chiptune capital. Thus, the actants of chipsound ‘authenticity’ and nostalgia factor into the ludomusical fields of chiptune. All such factors inform ludomusical potential: they can un/consciously influence the ways in which fans play and play with chiptune, from the coordination of their muscles and digits to operate chip-musical technologies and remediate PSGs, to interpret, to all aspects of chip-musicianship (cf. Moseley 2016, pp. 15-8).

The technological constraints that underpin chiptune are a good example of how non-human ludomusicality can influence the potential of chiptune’s ludomusical fields. As Chapter 2 emphasised, the limitations of chip-musical technologies are a key mediator of chiptune practice, culture, and fannish identification. These constraints may restrict aspects of composition, arrangement, and sampling rates and yet, in terms of a ludomusical field, they have musically playful potential and have also been shown to be fruitful in this way: they actively encourage composers to play around and within their confines, through which both the agencies of the chip-musical technologies and fan capital factor into how this play might take place, and with what outcome (cf. Moseley 2016, p. 42; see Chapter 6 on desire, p. 199). As also discussed in both the Introduction and Chapter 1, chiptune fans actively enjoy overcoming chiptune’s technological and sonic constraints to achieve effective voice-leading, harmonic arrangements, and full-sounding, energetic rhythm parts in a single monophonic audio channel.

The constraints of chip-musical technologies also encourage hardware hacking and modification practices. The actions of chiptune hardware hacking alter how chiptunes and

chipsounds are played, and are played with, and these actions themselves playfully subvert PSG technology beyond the intentions of its manufacturers (cf. Moseley 2016, p. 45). Through this kind of playful remediation, the ludomusical field of original hardware is expanded, yet the ability to mediate the signature grit of chiptune's timbral character remains a part of this field. The gAtari 2600, an invention by veteran chip-musician cTrix, is a great example of how the constraints of chiptune's ludomusical fields are at once retained and expanded.<sup>144</sup> The gAtari 2600 is an interesting example of how expansive PSG remediation strategies can be. The instrument itself is an amalgamation of an Atari 2600 fitted with Slocum's Synthcart, a video game joystick that enables the switching of tracks, and three FX pedals – an equaliser (EQ) pedal, a flange pedal, and a digital delay pedal – along the 'neck' of the instrument, all of which are assembled on a frame reminiscent of a *Guitar Hero* controller for ease of play (see Chapter 2, p. 63).

The mediatory source of chipsound, the TIA PSG of the Atari 2600, is itself a ludomusical field with its own possibilities for playing and playing with chiptune, albeit very limited ones. cTrix acknowledges he admires the atonal notation and 'bizarre' sonic qualities and tuning of the 2600's PSG yet, as Chapter 2 discussed, the constraints of the original Atari 2600's hardware is a challenge even for the most seasoned chiptune enthusiasts and musicians (cTrix 2015; Chapter 2, p. 86). cTrix's capital in chiptune technology and his own chip-musicianship, the Synthcart, the hacking of the 2600's hardware, the inclusions of the joystick and FX pedals have all expanded the playful potential of the 2600's ludomusical field. The TIA PSG remains intact, lending the gAtari 2600 that distinct and 'chunky' timbre that cTrix admires, yet the ludomusical potential of this field is now enhanced (cTrix 2015). In terms of ludomusical fields, chiptune's constraints rather emphasise what fans *can* do within and around their mediatory parameters, and how transformative they can be, even if chiptune's distinct sonic character is defined in many ways by what these technologies *cannot* do.

Why, then, is PSG remediation both ludomusical and affective? We can read Moseley's concept of ludomusicality as a capacity to affect and to be affected within a musical actor-network: a capacity to play music and to be changed by the musical play of non/human others. The agencies of chiptune's primary mediators are thereby also ludomusical as well as affective. In this light, the primary mediators of chiptune fandom are all charged with affective *potential* as they interact with one another through chiptune's ludomusical fields. We cannot say for certain how these ludomusical fields will be set up in future, nor how they will be played or

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<sup>144</sup> See here: <https://www.theverge.com/2011/12/30/2670003/ctrixs-gatari-chiptune-rave-atari-2600>

expanded, nor can we say which kind of ‘homecomings’ may emerge through their affordances. Once chiptune’s ludomusical fields are accessed and established, once fans switch on and begin to play, the non/human and non/musical mediators of the chiptune actor-network begin their inter-objective relations. Whether pressing ‘play’ on a contemporary portable music device, or by way of a yellowing plastic ‘Enter’ key on an Atari ST, musical *play* – the ‘ludo’ in ludomusicality – is the affective catalyst through which the magic of chiptune comes alive.

### ***5.2.2 Chiptune in play: ludomusical encounters, vitality, and identification***

It is Blip Fest in Tokyo, 2011. cTrix takes to the stage adorned by his beloved gAtari 2600.<sup>145</sup> The ludomusical field of this beastly instrument, already expanded through the Synthcart, FX pedals and new body, is expanded further by way of cables, which snake into the apparatus on the table in front of cTrix. On this table is a live audio mixer, a digital audio interface, what appears to be a contemporary laptop, and a Commodore Amiga A500 computer unit running ProTracker, with a small screen in the centre of the table for cTrix to view. Stage left, there is another table for the audio/visual engineer; this table is for the controller of the lighting and visual imagery that animates the stage and its central projection screen, which, to the casual onlooker, likewise sports various equipment nested in wires – a typical aesthetic of live chiptune events. The crowd cheer to greet cTrix and the magnificent feat of hacking ingenuity that hangs over his shoulders. He acknowledges the crowd, raises the gAtari 2600 to a comfortable position, reaches for the video game arcade-style joystick mounted on to its shiny plastic body, and he presses one of its invitingly bright red buttons.

At that moment, the opening number – ‘Triple Pump’ – begins to play as ProTracker kicks into life to perform its bits-to-beats functions. In this instance, ProTracker is sending a stream of musical data into the TIA chip on board the gAtari 2600 via the Synthcart, through which, in turn, the TIA chip sends digital to audio information into the mixer setup. This data becomes audible, chiptune begins to sound, and as cTrix becomes animated into his performance, so too do the crowd. Playing to the strengths of the Atari 2600’s TIA chip, the timbral qualities of the piece evoke an industrial vibe, with the already harsh and gritty qualities of TIA chipsound distorted further by the FX pedals. As this takes place, the overhead lighting rig begins to pulse in syncopation with the metre of the piece, and glitch-based imagery begins to flicker in erratic geometric patterns on the screen behind the stage.

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<sup>145</sup> Video of performance – starting at 1:10 – available here: <https://www.youtube.com/watch?v=S8e7g8kJIlo>

The beats and blips we hear are pre-programmed by cTrix and are played by ProTracker. While cTrix's chip-musicianship is on display through this programming, his ludomusicality in this live setting explicitly includes the semi/improvisatory manipulation of his own chiptune compositions by way of the gAtari 2600's on board FX pedals. As cTrix plays his gAtari 2600 he is playing to the crowd, just as he becomes receptive to their movements, their cheers, and their enthusiasm. Yet it is noticeable that the non-human and non/musical components of this ludomusical field – comprised as it is of the gAtari 2600, the Amiga tracker sequencer, the amplificatory equipment – and chip-beats that thud and scream outwards from the speaker cones also seem to be playing with the humans in the venue (cf. Moseley 2016, pp. 17-8). This relationality – this 'musical back-and-forth,' as Bit Shifter describes it – is exactly how we can grasp the affective processes through which the 'homecomings' of chiptune fandom emerge.

[The] verb 'to play' connotes a relational mode at the same time as denoting a particular type of ludic action. [Although] play is often cited as an intrinsic attribute of humankind, it has long been observed that play is not exclusive to people, or even gambling animals. [Play] can also describe mechanical processes that *animate* [in/organic] matter by accident or design [...]. (Moseley 2016, p. 16, emphasis added)

Play – in and of itself – is an affective process through which pre-existing non/human bodies are brought into new networks of relations; as play takes place, the encounters between the pre-existing elements may transform their bodies and the spaces of encounter in which they inter/act, as well as co-produce new emergent events in the process (Moseley 2016, pp. 3, 16-9; cf. Salen and Zimmerman 2003, p. 305; cf. Huizinga 2014, pp. 158-69; cf. Russ 1993, p. 7). Play, for Thomas S. Henricks is 'the laboratory of the possible;' for Donna Haraway, play 'makes an opening;' for Jen Crawford, Bethaney Turner, and Cathy Hope, it 'enables the generation of alternate ways of being and doing in and of the world' (Henricks 2006, p. 1; Haraway 2008, p. 240; Crawford, Turner, and Hope 2017, p. 1). For Hills, 'affective play' is the mode through which fans explore their relationships with their objects, texts, and communities, as well as *create* them – blurring and crossing boundaries between reality and fantasy, culture, and time and place (2002, pp. 60-83).

Play is as integral to chiptune as it is all music. Music *is* play (cf. Huizinga 2014, p. 158; cf. Miller 2009, p. 411; Cheng 2014 pp. 20, 90-1). It is *through* playful and affective



processes that music becomes animated. So, what happens when chiptune is played? How is the inter-objectivity of chiptune brought together and modulated through ludomusical play? How do the ‘homecomings’ of chiptune fandom emerge through the ludomusical play that takes place between its primary mediators? Building on the notion of ludomusical fields and their affective potential, this subsection introduces 3 more affective aspects of ludomusical play in chiptune: ludomusical encounters and events, chiptune actor-networks as assemblages, and the capture of ludomusical vitality.

I use the term ‘ludomusical encounters’ to refer to the moments of contact and interaction between non/human and non/musical bodies (*corps-a-corps*) in musical play (cf. Szendy 2016, pp. 5-12). As per affect theory’s definition of the term, ‘body’ extends to non/human and non/musical bodies – both singular and collective – as well as abstract actants. Ludomusical encounters are affective in that they are catalytical: they animate and set musical play in motion, and also describe how the elements that constitute a musical-actor-network interact with one another, and how changes occur in these relations (cf. Thompson and Biddle 2013, p. 6; cf. Moseley 2016, pp. 15-18; cf. Kramer 2002, pp. 2-3; cf. Huizinga 2014, pp. 158-60; cf. Small in Chapter 1, pp. 47-53). Through the affective relations they set in motion, ludomusical encounters can engender a further series of new musical relations and events, which might include, but are not limited to, rhythms, melodies, harmonies, timbres, gestures, and emotions.

The moment that human hands contact the ludomusical field of a piano, for example, is the moment that ludomusicality – as affective potential – becomes a ludomusical encounter and ludomusical event. The moment human fingers depress its musical keys, a new network of inter-objective relations between the cerebral and corporeal bodies of the pianist, the body of the piano, and the other non/human bodies within the performance space – perhaps a practice room – forms. As a ludomusical encounter, the depression of the keys engenders momentum, vibration, and is a catalytical event that animates all bodies involved into new affective relations beyond their ‘stasis’ as objects, or their pre-existing contexts (cf. Szendy 2016, pp. 2-7). This ludomusical encounter animates the piano’s mechanisms, bringing its hammers into contact with its strings. At which point the ludomusicality of the piano’s strings, too, become animated, and soundwaves become airborne through their vibrations.

The bodies of pitches, timbres, and harmonies that emerge from the body of the piano are affective and ludomusical events, whose vitality is co-formed through the ludomusicality of both the piano and its player. These affective and ludomusical events are mediated by the intensities of the encounter between fingers and keys, and hammers and strings, as well as the

tuning and condition of the piano, perhaps the score on the music stand, the acoustics and temperature of the practice room, and the mood, competency, and intention of the pianist (cf. Moseley 2016, p. 18). The sonic bodies that emerge from the piano's strings also possess a ludomusicality; they mediate the musical performance and those present as they circulate and merge with other elements of the musical actor-network, to affect and to be affected (cf. Bennett 2010, p. 31).

In the context of chiptune, ludomusical encounters are likewise catalytical and can take place on any scale of inter-objective relation within chiptune's actor-networks. They describe the non/human encounters that start chiptune playing, keep it playing, and the interactions that take place between chiptune's non/human and non/musical bodies as this play unfurls. They take place as human digits animate the control interfaces of Game Boys, as binary digits are animated and transformed into their spectral form by PSG oscillators and DACs, as chiptune capital in standards of 'authenticity' are animated by the constraints of chipsound timbre and chip-musical technologies, and vice versa. Ludomusical encounters are the affective processes that transform bytes into beats; MIDI data into audible melodies and harmonies; a casual listener into a dedicated chiptune fan (see survey participant 16, age category 26-35, in appendix, p. 229).

Chiptune's telephone chords – the rapid arpeggio technique used to achieve harmony using only basic waveform and a monophonic audio channel – are a good example of how non/human ludomusicality encounters one another in musical play (see Introduction, p. 7). A chip-musician may code the pitch and interval parameters of a telephone chord into a tracker sequencer: 'C4 – 057' in order to sound a Csus4 chord from the root pitch of middle C, as well as the duration and the dynamics of its ADSR. Yet the telephone chord is a ludomusical event in that it emerges *in play*. The telephone chord's emergence is reliant on the ludomusical encounters *between* the assembly/hexadecimal code and oscillators, and between the oscillators and the means of amplification – be that through the tinny speakers and beige plastic grill of an Amiga 1084 monitor, a more contemporary sound system, or headphones. Telephone chords demonstrate how non/human ludomusicality can co-create musical events through their encounter in play, as well as create new and expand musical-actor-networks of broader affective relations. This very affective process flourishes as cTrix takes to the stage and begins his performance.

The moment that cTrix presses that luminous red button is a ludomusical encounter, one that catalyses his performance and opens up a new inter-objective network of affective encounters, relations, and co-formed events between the ludomusical field of the gAtari 2600,

the equipment tables, cTrix himself, the lighting and graphical setup, and the heterogeneous audience. Through the animation of this ludomusical field by way of that inviting red button, the pieces of equipment assembled for cTrix's performance begin to encounter and network with one another by way of the data flowing through their audio and MIDI cables – the speakers then emit the opening bars of 'Triple Pump.' We hear a stuttered succession of bit-crushed and atonal timbres, with the TIA's white noise generator predominantly forming the qualities of these sounds (1:13 in the performance video).

Through Slocum's 'Synthcart' – installed into the cartridge slot of the gAtari 2600 – and cTrix's own software tweaks, cTrix is able to program triplet and shuffle rhythms through the TIA, so that the title of 'Triple Pump' reflects the rhythmic programming and feel of the piece.<sup>146</sup> The succession of chipsound stutters that open cTrix's performance lasts for two bars in 4/4 time, with a tempo circa 140bpm. Each stutter lasts a quaver in duration, and these stutters are grouped into 4 sets of three triplets on the pulse of the bar. On the 4<sup>th</sup> beat in the second bar of these stutters, there is a longer burst of white noise, which lasts a crotchet in duration and slides down the frequency spectrum to create a transitional sweep. After these two bars of gritty atonality, and signalled by the crotchet burst of white noise, there is a change in the arrangement.

In bar three (1:17 in the performance video), we hear the introduction of an electronic kick drum. This kick drum – a distorted thud typical of the TIA chip's percussive abilities – is syncopated in its programming, representing, rather aptly for the focus of this chapter, a heartbeat. We also hear pitch: an alternating sequence between the notes A2 and G2 in the pedal octave. The pattern of the kick drum and the bass triplets plays through bars three and four. In bar five – 1:20 in the performance video – cTrix's digits then seize the ludomusical parameters of the gAtari's flanger pedal, and as he increases the intensity of the frequency dial. All semblance of metre, the syncopated heartbeat rhythm, melodic content, and chipsound melt away and dissolve into two bars of distortion, almost like the sonic equivalent of hot treacle gradually cooling across an angular surface.

The performance and flow of any form of musicking can be understood as both a convergence and a succession of non/human ludomusical encounters and their emergent events, which can range from the briefest nuances of frequency shifts to the series of encounters that shape musical phrases and forms, to the recurring ludomusical encounters that sustain the ludomusical event of a drone. In the opening moments of cTrix's performance and the

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<sup>146</sup> See demonstration at: <https://vimeo.com/23589320>

introductory bars of ‘Triple Pump,’ multiple ludomusical encounters and their emergent events are already occurring and converging on a number of different scales and durations. Each and every white noise stutter we hear in the opening bars is a ludomusical event, emerging through ludomusical encounters – affective body-to-body contact – between every digit of musical data within ProTracker, through to the Synthcart and the TIA’s two oscillators on board the gAtari 26000, the FX pedals, cTrix’s ludomusicality, and the sound system. Every semblance of rhythm, melody, harmony, and timbre is all affected by the ludomusical encounters between these mediators. The audience, too, are (ludo)musicking. Their bodies ludomusically encounter those of the chipsounds, rhythms and harmonies emitted by the speakers; they encounter cTrix himself nodding his head with them to the beats of ‘Triple Pump,’ to his swaying, jumping, his digits performatively manipulating the interfaces of the gAtari 2600’s FX pedals; they encounter the erratic gambol of the glitch art and lighting rigs that animate the stage and the audience area; and they encounter the dancing of their fellow audience members.

Blip Fest is *alive*. Through the ludomusical encounters that begin the moment cTrix presses that bright red button, as musicking begins, Blip Fest becomes an assemblage in motion. As outlined in subsection 5.1.2, assemblages are groupings of heterogeneous vibrant materials in ongoing, dynamic ‘becoming.’ Every element of vibrant matter within an assemblage possesses its own *conatus* – which defines its capacity to affect and to be affected – and the qualities that emerge through assemblages are the sum affectivity of the vibrant bodies that both compose and interact with them. Here, Bennett’s insights can directly apply to music (see Van Elferen 2020, pp. 14, 133-74). Blip Fest in performance, as an assemblage, produces a new and emergent vitality through the ludomusical encounters and events that take place, and converge, through its mediators.

cTrix, the gAtari 2600 and all its grafted ludomusical prosthesis, the Amiga, the other non-human and non/musical actors, and the enthralled audience are, in light of Bennett’s work, affective bodies: vibrant (and in this case ludomusical) materials (cf. Moseley 2016, p. 110). In Bennett’s view, every non/human and non/musical mediator of Blip Fest possesses a *conatus*, a life and energy, and thereby a capacity to ludomusically affect and to be affected. Every one of these vibrant materials – down to the composite harmonics synthesized by the TIA’s oscillators – are *all* involved in the (ludo)musicking taking place and, therefore, each co-mediate the electric atmosphere and liveliness of Blip Fest’s vitality through their ludomusical encounters and emergent events.

In bar seven, at 1:23 in the performance video, the vitality of Blip Fest accelerates. cTrix releases his grip on the flanger pedal and the arrangement changes once more. The kick

drum now follows the 4/4 pulse of each bar, mercilessly driving the piece. The bass sound from the gAtari's PSG is now mapped to the 4 groups of 3 triplets, enabled by the Synthcart. Every triplet group cycles through the quaver notes A, C, and A the octave above, the pulse landing on the first quaver of each group. Erratically sounding between the driving four-on-the-floor kick drum and the bass triplets, the atonal fragments of white noise return to decorate beats 3 and 4 of every bar. The audience becomes visibly animated as they adjust to their new ludomusical relations. With bar 7's renewed vitality, the audience begin to jump up and down in time, some arms waving and pointing at the stage, lulling with every down beat – they are smiling. cTrix is also now fully enthralled in his performance: jumping, dramatically throwing his head back as he plays, and gesturing as much as the cumbersome gAtari 2600 will allow. At the end of every 4 bars in the main phase of 'Triple Pump,' cTrix once again manipulates the ludomusical field of the FX pedals, creating new variations and glitches that slide the melodic and rhythmic material through unexpected frequency peaks and distortions.

At bar thirty-one, 2:02 in the performance video, the arrangement shifts to a shuffle rhythm, retaining the 4/4 pulse but with the kick now syncopated – sounding on the 1<sup>st</sup> beat of the bar, and the offbeat quaver before the snare on the 3<sup>rd</sup> beat of the bar. The crowd adjust again to the ludomusical changes within the assemblage of Blip Fest. Notice at 2:06 the two audience members in the crowd, stage left and wearing mostly white, whose arm bobbing has now adjusted to the different energy of the new ludomusical encounters unfurling around them: slower than before to land on the kick and snare of the shuffle rhythm. At bar 39, 2:15 in the performance video, the introduction of 'Triple Pump' repeats and the audience adjust once again, cTrix pauses in motion and grits his teeth at them as if to portray the rhythm and intensity of the TIA's abrasive chipsounds.

The performance is lively and intense throughout. The whole assemblage of Blip Fest 'becomes' – in the Deleuzian sense of the term – with every successive ludomusical encounter, producing new and temporary unities, events, energies and qualities between its constituents. The audience are 'becoming with' every one of cTrix's movements, as both cTrix and the audience are 'becoming with' every utterance of chip-musical technologies and chipsounds that bind them together in a frisson of almost synchronised jumping, dancing, nodding and playing. The title 'Triple Pump' aptly conveys the ludomusical encounter between the rhythmic programming and the audience, who enact the ludomusical event of pumping their fists to the emergent triplet feel. These ludomusical events, in turn, encounter and encourage fellow audience members and cTrix's performativity. The atmosphere is charged with a co-generated

affective immediacy and ludomusical vitality, which animates, circulates among and through, interconnects, and crosses the divides between non/human, non/musical and non/corporeal bodies (cf. Miller 2009, p. 411). In this instance, the circulation of ludomusical vitality emerges between the chip-musical technologies, cTrix, the audience, and their capital, and chipsound timbres among other factors of rhythm, melody, lighting strobes, and the collage of digital ruptures on the projection screen.

To understand the relationship between the ludomusically-shaped vitality that emerges through chiptune assemblages and the ‘homecomings’ of chiptune fandom, we can turn specific attention to the human actors of Blip Fest. Awash in the performance, cTrix and the audience are affective bodies in a process of ‘becoming’ accelerated through chip-musical technologies, chipsound timbres, and the ludomusical events of rhythm, melody, harmony, expressions and dynamics. cTrix and every single audience member are nodes within the assemblage of Blip Fest; they are assemblages themselves, ‘becoming with’ the convergent ludomusical encounters and events that both emerge from and envelop them (cf. Kassabian 2013, p. xxv). With every ludomusical encounter and event, and with every modulation of the Blip Fest assemblage, cTrix and the audience capture the ludomusical vitality of the Blip Fest assemblage on and within their bodies. As this occurs, their own vitality is enhanced and modulated; from the briefest of blips to the circulatory passages that form repeating musical phrases, every one of these ludomusical affects fuel the bodily responses and chiptune literacy competencies of the human actors. For cTrix, the capture of these ludomusical intensities provoke his competencies to play to the audience, to nod his head and jump, and inform his sense of timing as to when to manipulate the gAtari 2600’s ludomusical field; for the audience, it fuels their smiles and drives their competency to dance, to wave their hands and jump in time.

This capture of unfurling ludomusical vitality continues until cTrix ends his performance the very way he started it: through a ludomusical encounter with the big red button (3:33 in the performance video). The gAtari 2600’s TIA chip ends ‘Triple Pump’ on a nasally pulse wave portamento that descends two octaves before ceasing its voicing. cTrix cranes over, his body capturing and ‘becoming with’ the ludomusical event of the descending pitch; the audience rise in a chorus of cheers, mouths aghast, their bodies tingling with the capture of a renewed vitality.

As the cTrix case study demonstrates, chiptune’s ludomusicality can take place through an inexhaustible range of potential ludomusical fields, from all forms of chip-musicianship to all means through which fans can listen to their favourite chiptunes, to chiptune’s expansive

intertextual ludomusicality that plays with pre-existing cultural elements. We can now understand that it is the affective *process* of ludomusical encounters through which chiptune captures the hearts and minds of its fans. It is through ludomusical play – whatever its context or execution – that fans interact with and affect chiptune, and chiptune interacts with and affect fans. The ludomusical play between chiptune’s primary mediators – among other potential contours of non/human and non/musical agencies – transforms the pre-existing and the inanimate into an event: the catalyst for the vitality that make the heart of chiptune fandom ‘beat,’ and keeps it ‘beating,’ for Redacted and chiptune fans the world over (cf. Moseley 2016, pp. 17-8).

### **5.3 Ludomusicality and the ‘Homecoming’ of Chiptune Fandom**

The primary research questions guiding this thesis are, first, how are fan identities shaped through ongoing interactions with chiptune? Second, through which musical process does this take place? Ludomusicality, as the way in which chiptune’s primary non/human mediators encounter and interact with another, now answers the second question. As fans begin their musicking, as they ludomusically play and play with chiptune – be it through casual listening or as a chip-musician – they do not just become a part of a musical actor-network, as Chapter 1 outlined. We can now understand that they form an assemblage with the vibrant, ludomusical materials of chiptune’s other primary mediators, with each actor and actant possessing unique capacities to ludomusically affect the emergent vitality of chiptune’s access and operation, interpretation, and creation.

It is the un/conscious and subjective *capture* of ludomusical vitality through the cerebral and corporeal bodies of musicking fans where the ‘homecomings’ of chiptune fandom emerge (cf. Thompson and Biddle 2013, pp. 17-19). Whether subjectively captured as sensations of nostalgia, ‘authenticity,’ playful creativity, community, or any form of personal significance, the ‘homecomings’ of chiptune fandom are ludomusical events that take place on and in the bodies of fans: co-generated by the ludomusical encounters and events between chiptune’s primary mediators and ‘contoured’ through the factors of melody, harmony, and rhythm (cf. Van Elferen 2016, p. 36). This subjective capture of ludomusical vitality can spur the mediation of memory and time, hauntologically stirring multiple mattering connections and further colouring their significance with a renewed energy. This capture of ludomusical vitality is why chiptune sticks, why it becomes catchy and upbeat, impels fans to nod their heads and jump as cTrix performs, and creates a sense of regaining touch with what matters (cf. Schrimshaw 2013, p. 30; cf. Ahmed 2010, ‘Happy Objects;’ Chapter 1, section 1.1). This

emergent vitality is that special ungraspable *something* which participant 55, among Bit Shifter and other fans, attributes to chipsound timbres and chiptune tricks.

As Moseley argues, ludomusicality escapes the linear trajectory of cause and effect: musical play relationally fluctuates between that which already exists, the familiar and the pre-ordained – as non/human resources, rules, boundaries, fantasies, scores, and pre-existing meanings – and the unforeseeable, between the ‘performance of familiar cultural scripts and the imperative to improvise’ (2016, pp. 2, 4, 16, 19). This contention reflects the essential tension of musical immanence and composition portrayed by Blake and Van Elferen (see Chapter 1, p. 65). The ‘homecomings’ of chiptune fandom may involve the haunting of pre-existing and mattering connotations, but there is also potential for new and unpredictable connotations to emerge through the generative processes of ludomusical play (cf. Chapter 4, pp. 100-19). In addition, through the ludomusical encounters that unfurl as chiptune plays, chiptune assemblages are in perpetual motion: flowing, altering in dynamics, and always in transition between ludomusical encounters, their transitory events, and their modulating vitality. The immanence of chiptune’s ‘homecomings’ are likewise transitory and unstable (cf. Small in Chapter 1, pp. 48-53). With every subsequent ludomusical encounter, every new emergent ludomusical event, every modulation of the vitality of chiptune assemblages and its subjective capture in the bodies of musicking fans, new ‘homecomings’ can emerge and conflate with others, or cause others to dissolve entirely (cf. Moseley 2016, p. 37).

Just as affect theory argues that the traces of affective encounters can alter the potential of a body to affect and to be affected, I also argue that this can occur with the ludomusicality and literacy competencies of chiptune fans. The ludomusical traces of cTrix’s performance will remain with the audience at Blip Fest, which then accumulates into new fan capital as memories of the event, or new capital in being ‘in the know’ of having witnessed the ludomusicality of the gAtari and its masterful creator in person. Relevant to the cTrix case study above, the way these traces alter the ludomusicality of chiptune fans can be observed in the survey responses of participants 11 and 14. Describing their introduction to chiptune, participant 11 writes the following:

A friend of mine (nickname Redacted ) did Chiptune in my hometown. I saw some of his live performances utilizing a Game boy with Nanoloop and an electric guitar. I was blown away by the power and the soundscape. So I contacted him and had him explain how it works. Then I bought a Game boy



and a copy of Nanoloop and started creating music myself. (Age category 26-35, see appendix, p. 229)

Comparable to participant 11's response, participant 14 writes:

I discovered chiptune through the band Anamanaguchi and their [2010] soundtrack to the *Scott Pilgrim Vs The World* video game. After looking up how they make their music, I found groups like [the] *Chiptunes = WIN* [blog] and the now-on-hiatus Superbyte Festival which helped me get started for myself. (Age category 26-35, see appendix, p. 229)

If we look at the statements of participant 11 and 14 through the analytical lens of this chapter, we can trace the alteration of their own ludomusicality through the residual traces of their introductory – and subsequent – ludomusical encounters with chiptune. Both reveal that live chiptune instigated their interest in chip-musicianship. In the case of participant 11, we gain insight into the particulars of the ludomusical encounters that developed their capital. In their own words they were 'blown away;' the ways in which participant 11 captured the ludomusicality vitality shaped by Redacted, the chip-musical technologies and chipsounds of the Game Boy and Nanoloop, the electric guitar, and the other audience members evidently created a profound 'homecoming' for them.

As both participant 11 and 14 reveal, their initial ludomusical encounters with chiptune spurred them on into researching chiptune composition methods, reaching out to those within the chiptune community with the relevant know-how, and beginning to develop their own chiptune capital and literacy competencies through ludomusical play. The ludomusical traces they captured and retained as capital were charged with affective and ludomusical *potential* to become active again, affect their mattering maps, guide the use of their chiptune literacy competencies, setting their ludomusicality off into new and divergent pathways (see further in Chapter 6, pp. 199-210). We can understand, therefore, that while fans interact with chiptune from a position of identity, they are also potentially changed by their ludomusical encounters and their residual traces (cf. Wolff 2005, p. 227).

How, then, do ludomusical encounters, the vitality of their emergent 'homecomings,' and their residual traces relate to chiptune fan identity? From the combined perspectives of affect theory, ludomusicality, and with the help of Bennett's vital materialism, the fact that ludomusical encounters with chiptune are the primary source of fannish vitality strongly

suggests that chiptune fan identity functions like an affective body, whose vitality and persistence relies on forming assemblages with chiptune's primary mediators through ludomusical encounters. If fans need ludomusical encounters with chiptune in order to construct, affirm and maintain a sense of identity, and to maintain social bonds, then there is the strong suggestion that chiptune fans also possess a *conatus* that drives them towards their ludomusical encounters. Chiptune fan identity, therefore, can be analysed both in its on-going construction through accumulated ludomusical traces, and in its on-going affective and ludomusical production (cf. Massumi 2002, pp. 34-5).

# Chapter VI

## **Chiptune Fan Identity, Ludomusicality, and Nomadic Subjects**

The ability of an artist to create an identity through the chiptune sound is something to admire and look forward to. (Survey participant 50, age category 19-25, see appendix, p. 229)

In the preceding chapters I have established, first, that fans experience their musical interactions with chiptune as a ‘homecoming’ of identifications; second, which non/human and non/musical mediators are integral to the ‘homecoming’ process, and what each mediator does to shape the experience; and third, the ludomusical and affective interactions that take place between these mediators, through which the vitality of these identifications are subjectively captured by musicking fans as ‘homecoming.’ Chapter 5 then proposed that if the ‘homecoming’ of chiptune fandom relies on the affectivity of ludomusical encounters and their emergent vitality, then we can understand chiptune fans and their identities in terms of affective bodies. On this premise, this final chapter moves into the final part of this study’s theoretical framework to answer the primary research question of this thesis: to explore how chiptune fan identities are shaped through the affectivity of ludomusical encounters. To do so, I will adapt Braidotti’s concept of the ‘nomadic subject’ (2011a; 2011b).

One of the main problems raised by this study is how we can understand chiptune fan identity as something that is embodied and experienced as stable, inherent, ‘authentic,’ and simultaneously as something that is also ephemeral and unstable, unpredictably changes over time, and in which chiptune plays a key role. Braidotti’s concept of the nomadic subject is the most advanced theoretical framework for explaining how a sense of identity is at once embodied, fluid and socially mediated. Her theoretical framework has great potential as a template through which we can examine the relationship between chiptune fan identity, and the affective ludomusical processes that produce it. In the following sections, key aspects from Braidotti’s framework are outlined and then adapted for ludomusicological use with the aim of tying the insights of this thesis together.

### **6.1 Braidotti’s Theory of Identity and Affect**

Braidotti’s approach to identity and affect directly links to this study’s approach to chiptune fandom. Following the work of Deleuze, Braidotti – expanding feminist epistemologies –

emphasises that our identities are not a hermetic ‘inner’ or God-given essence but are composed through complex social relations between non/humans, and the ‘traces’ these encounters leave in their wake (Braidotti 2011a, pp. 18, 40-1; cf. Massumi 2002, p. 7; cf. Kassabian 2013, pp. xxvii, xxix).<sup>147</sup> Braidotti’s use of the term ‘traces’ is as defined in affect theory – as a residue left behind by affective encounters and processes – and her reading of affect is grounded in Spinoza and Deleuze (2011a, pp. 10-2, 25, 29, 40, 112, 247; Braidotti 2011b, pp. 2, 152-5, 214). In an argument similar to Watkins’ approach to affect and pedagogy, Braidotti contends that identity develops through the residual traces of affective encounters (see Watkins in Chapter 5, p. 159; Braidotti 2011a, pp. 10-1, 17-8, 25, 38, 40-1; Braidotti 2011b, pp. 4, 263-78, 310). The traces of our affective encounters accumulate to form a ‘map’ of ‘where we have been’ and ‘who’ we now are as a result (Braidotti 2011a, pp. 27, 40-2; Henry, Jusová, and Westerman 2014, p. 152).

‘Traces’ of ‘where we have been’ refer to the ways in which all forms of lived experience are ‘tattooed’ on our cerebral and corporeal bodies (Braidotti 2011a, p. 11). This ‘tattooing’ describes the ways we capture, affix meaning, and retain traces of the affective encounters that have taken place throughout our lives with other non/humans on multiple levels of experience (cf. *Ibid.*, p. 4). Just as affect theory argues that the traces left by affective encounters can alter the bodies involved – consequently changing their potential to affect and to be affected – Braidotti relates this process to our own bodies (*Ibid.*, p. 158). She argues that the intensities of affective encounters and their lasting impressions alter our growth as well as our potential to relate to other non/humans in the future (*Ibid.*, pp. 10-1, 38; Braidotti 2011b, pp. 288-9). Such traces might include familiar elements and belongings – as auto/biographical aspects, languages, race, gender, cultural codes, and geographical locations – as well as traces of the more upsetting or damaging encounters (Braidotti 2011a, p. 24; Braidotti 2011b, pp. 233, 256).

In addition, ‘where we have been’ does not just mean geographical locations to which we have literally travelled. Braidotti’s framework also takes into account affective encounters that involve both in/corporeal bodies, and that take place by way of description, memory, imagination, and in thought (cf. Braidotti 2011a, pp. 25-6; cf. Braidotti 2011b, p. 33). She notes that ‘some of the greatest trips can take place without physically moving from one’s habitat’ (Braidotti 2011a, p. 26).

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<sup>147</sup> (See Deleuze and Guattari 2013b, pp. 1-27, 272).

The point that identity is not an ‘essence’ but rather a complex and multi-layered map of experiential traces links to Chapter 3’s conception of chiptune capital as a multidimensional repertoire of fannish knowledge and its mattering significance. As an aggregate of knowledge spanning the fields of chipsound, context, music, and self (identity), chiptune capital is not just a list of chiptune preferences, expertise, and (sub)cultural affiliations; these aspects are passionately woven into and (mattering) mapped together with the more animated and intensive aspects of chiptune fan experiences, which include personal memories, identifications, nostalgic recollections, and the convictions of ‘authenticity’ (cf. pp. 106-16). To further the point made in Chapter 5, chiptune capital can be understood as developed through ludomusical traces: a map of the residues and impressions of where fans ‘have been’ in relation to the intensities of their ludomusical experiences with chiptune (and beyond) (cf. pp. 176-80).

Braidotti’s use of the term ‘trip’ to refer to *any* form of encounter with non/human others also applies to ludomusical encounters and the identifications they evoke. By way of a vast range of chip-musical technologies and PSG remediation strategies, chiptune can be accessed pretty much anywhere. Chiptune fans do not literally have to travel in order to evoke the feelings of ‘home’ and belonging (cf. Chapter 1, pp. 54-65). From online chiptune trackers and streaming sites, *YouTube* to more specialist domains like *micromusic.net*, all are means for fans to access sources of identification and avenues for their ludomusicality instantaneously. We can also think of the ways in which the hauntological and affective capacity of chiptune can ‘take’ fans to places by way of memory and imagination as a prime example of ‘travel’ without literal relocation (cf. Chapter 4, p. 137).

Braidotti emphasises that identity is unfixed and in perpetual flux: it constantly and dynamically flows in a non-linear process of development through successive and largely unpredictable affective encounters (Braidotti 2011a, pp. 11, 66, 246; Braidotti 2011b, p. 210; cf. Introduction, pp. 28-9). A sense of identity ‘rests not on fixity, but on contingency’ (Braidotti 2011a, p. 64). We may think of things that ground us, our native languages, our ‘true’ selves, belongings, homelands and our roots – these are, of course important – but Braidotti emphasises that these are only starting points and nodes in the ongoing process of our genealogy (*Ibid.*, pp. 25, 41, 158). Moreover, the aspects we might consider as the ‘starting points’ of our identity do not entirely or rigidly define its trajectory. Our anatomical sex, for instance, does not rigidly define our existence or the supposed ‘essence’ of our identity (*Ibid.*, p. 226).

The resulting ‘map’ of affective traces that compose our identity is then both unfixed as well as largely nonlinear in its organisation and recollection – especially as memory plays a

key role in this process (*Ibid.*, p. 158). As Braidotti writes: ‘identities [are a] *play* of multiple, fractured aspects of the self’ (*Ibid.*, emphasis added). What we might refer to as our identity – at any given time – is a means of giving a reassuring sense of unity and narrative to the kaleidoscopic swarm of convergent, complex and multi-layered, and at times incoherent and contradictory traces that compose them (*Ibid.*, pp. 42, 78; cf. Setti 2014, p. 129). In addition, as we reflect on our identity, or recall where we have been, we might only refer to or remember a selection of traces – ideally the positive ones – rather than refer to a totalisable and concretely definable unity.<sup>148</sup> As a result, our grasp of our identity at any given moment – of who we believe we are or currently ‘becoming’ – is always retrospective by way of memory and recollection (Braidotti 2011a, p. 158; cf. Giddens 1991, pp. 201-23).

Braidotti’s argument that the maps of traces that compose our identities are unfixed and in flux, non-totalisable, contingent and non-linear in its development is also relevant to the arguments and case studies of the preceding chapters. Due to the shifting nature of mattering maps, participation in chiptune is something that flows and ebbs in unpredictable ways; the mattering routes through which chiptune fans remediate PSGs, become ludomusical and creative, and the ways in which they identify with chipmusic are also irreducible to fixed patterns, behavioural essences, and uniform experiences (Chapter 3, pp. 116-22; see Chapter 5 on affect as potential, pp. 153-6). As Chapter 3 argued, chiptune capital should be understood as a continuum in ongoing development (see p. 151). Chapter 4 further emphasised the fluid nature of the fragments that compose chiptune fandom due to their reliance on memory and hauntology, which can be mediated by non-human agencies (see Chapter 4, p. 129-43). Braidotti’s contention that affective traces alter our affective potential to interact with non/human others also resonates with both the relationship between chiptune capital and chiptune literacy, and Chapter 5’s argument that the affective traces of ludomusical encounters alter the ludomusicality of chiptune fans (cf. pp. 162-8, 170-80).

Whether through discussions online, in person, or by way of survey data, the ways in which fans narrate chiptune’s personal importance is the same practice that Braidotti describes as stringing together a coherent unity over the multitudinous, multi-layered, and fragmented swarm of traces that constitute their chiptune fandom. Any specifically identified aspects or mattering narratives of a fan’s chiptune capital – be they memories of first hearing a new chiptune video game soundtrack on a wintry Christmas morning in the early 1990s, or the

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<sup>148</sup> See Deleuze and Guattari on the concept of ‘multiplicity’ (2013b pp. 8, 16, 561-4; see also Braidotti 2011a, pp. 157-8).

attributed ‘authenticities’ of hardware SID chips over VST emulations – are but starting points and nodes in its continual and unpredictable development. At any given time, a participant’s grasp of their chiptune fan identity is also a retrospective notion.

Finally, ‘identity is made of successive identifications’ (Braidotti 2011a, p. 158). As Braidotti emphasises, this process is also affective in that it relies on a bond with the ‘other’ (*Ibid.*, pp. 17, 158, 273).<sup>149</sup> There is no one overseeing or supervisory element that steers the development of identity (*Ibid.*, p. 41). While we may do things or act in a certain way to affirm a sense of self and belonging, in the process we reach out and interact with other non/humans, whose affective capacities are integral to the animation of our vitality and our agency to act (Braidotti 2011b, pp. 3-4, 232-3). Identity is a ‘becoming’ and not a ‘being’ fixed in a pre-defined and unitary existence (cf. Frith 2002, p. 110). Our experience of our identity, however, remains caught in the affective tension between ‘becoming’ and being (cf. Introduction, p. 22).

This point is also true of chiptune fan identity and resonates with the very basis of this study. Chiptune fan identity is maintained by way of successive identifications, whose ‘homecomings’ are channelled by way of PSG remediation strategies and contoured by the ensuing ludomusical encounters. Through their ludomusical engagements with chiptune, fans are able to touch base with the familiarity of their fandom (cf. Chapter 1, pp. 48-54). At the same time, however, due to the hauntological and affective nature of ludomusical encounters and their traces, there is always playful room for new relations, experiences, and transformations (cf. Chapter 4, pp. 129-37; cf. Chapter 5, pp. 168-76). How, then, can we now understand the ways in which chiptune fan identity is at once perceived and experienced as stable and familiar, and yet is unstable by way of affect and ever-shifting social-musical relations?

### **6.1.1 The nomadic subject**

Approaching the complex relationship between identity and non/human affective relations, Braidotti posits her figuration of the nomadic subject. The nomadic subject is an outline and analytical tool for the affective processes that occur in the ongoing shaping of the self (Braidotti 2011a, pp. 1-22). Braidotti writes:

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<sup>149</sup> The ‘other,’ in Braidotti’s understanding, being non/human entities external to the self (cf. 2011a, p. 8; 2011b, p. 4).

[The nomadic subject is a] nonunitary entity [that is] simultaneously self-propelling and heterodefined, i.e., outward bound. It is a collective assemblage, a relay point for a web of complex relations that displace the centrality of ego-indexed notions of identity. [Its] identity [is] made of transitions, successive shifts, and coordinated changes without an essential unity. The nomadic subject, however, is not altogether without unity [...]. (Braidotti 2011b, pp. 35, 151; Braidotti 2011a, pp. 3, 17, 22, 57-8, 158)

The nomadic subject embodies its multi-faceted genealogy – its shifting, mosaic swarm of affective traces – and is anchored to the assemblage of vital materials that form its body, yet it is ongoing and forward looking, affective, and actively yearns to construct itself within webs of affective relations with non/human others (Braidotti 2011a, pp. 10-12, 158; Braidotti 2011b, pp. 33, 199, 235).

On this yearning, Braidotti describes how the nomadic subject is able to seek out and enact the relational and affective conditions necessary for its survival, to reassure a sense of identity and stability from which it can operate, and to enhance its ability to function socially (2011a, p. 64):

[Nomadism] consists not so much in being homeless as being capable of recreating your home everywhere. [Nomadic subjects have] multiple places – called home – where they can rest up. [The] nomad carries her essential belongings with her wherever she goes and can create a home base anywhere. (*Ibid.*, pp. 45, 65)

Braidotti's use of the term 'home' here refers to the conditions that enable 'affirmations' and 'positive affects' to take place (2011b, pp. 3-4, 288, 311; Henry, Jusová, and Westerman 2014, p. 153). Positive affects are non/human encounters that animate the 'in-depth structures' and empower the vitality of the self, whereas negative affects – as outlined above – are ones whose encounters and traces diminish the empowerment, restrict or block the development of the subject, its affectivity, and its ability to relate to others (Braidotti 2011b, pp. 3, 310; Braidotti 2011a, p. 18).

Braidotti's descriptions of affirmation and positive affects echo Bennett's vital materialist approach to the affective body: as an assemblage whose apparent unity – or functional 'wholeness' – vitality and emergent qualities are reliant on the networks of



heterogeneous elements that both comprise them, as well as encounter them (see Chapter 5, p. 162). The nomadic subject is also an assemblage, a site of converging flows and affects (Braidotti 2011a, p. 64). Its affirmations *require* forming assemblages with other non/humans; the conditions of affirmation – or ‘positive affects’ – are not self-appointed or self-defined by any one non/human body alone, nor are they inherently ‘there,’ but are collectively constructed and socially mediated (cf. Braidotti 2011b, pp. 152, 286-7, 291, 294, 310-1; Braidotti 2011a, pp. 16, 64-6, 130). ‘Home’ is, like any location, ‘not a self-appointed and self-designed subject position, but rather a collectively shared and constructed, jointly occupied spatiotemporal territory’ (Braidotti 2011a, p. 16; Henry, Jusová and Westerman 2014, p. 153). The present ‘self’ of the nomadic subject – its present qualities, ‘thingness’ or ‘thisness’ – is then always provisional on the constellation of affective relations in which it finds itself; due to the transitory nature of affective encounters, events, and assemblages, nomadic subjects never settle into a fixed position, state, or form of identity (*Ibid.*, pp. 41-6, 64; cf. Deleuze and Guattari 2013b, pp. 449-92). Moreover, the nomadic subject actively avoids settling into fixity and rigid notions of identity (Braidotti 2011b, p. 229).

The process of affirmation is not an automatic, entirely harmonious, or linear one. Affirmation emerges through constant negotiation between the dynamic affects at play within a given assemblage (Braidotti 2011a, p. 311). As the process involves an interconnection with other non/human affects, whose affective capacities, encounters, and events are unpredictable, there is always potential for conflicts and clashes, which might increase or decrease the empowerment and vitality of the self (Braidotti 2011b, p. 311; cf. Bennett 2010, p. 22). As Chapter 5 also discussed, assemblages are constantly and dynamically forming, taking on and losing elements, modulating in their emergent properties and vitality, and disbanding. Accordingly, affirmations are not permanent.

Consequently, the nomadic subject must seek out and enact its affirmations continuously and for as long as necessary. As Braidotti writes: ‘you can never *be* a nomad; you can only go on trying to *become* nomadic’ (Braidotti 2011b, pp. 43, 41, emphasis added). Braidotti’s use of the term ‘become’ is used in the Deleuzian sense and relates to her contention that identity is made of successive identifications (cf. Chapter 5 on ‘becoming,’ p. 158). The nomadic subject has to affirm its ‘self’ continually – and thereby continually ‘*become*’ a ‘self’ – by way of enacting the necessary conditions for these positive affective relations to take place.

For Braidotti, a key part of ‘becoming’ a self is to enhance our vitality, and to also transform negative affects – such as hurt and pain – and their residual traces into positive ones

where possible (2011b, pp. 288, 290, 305). She argues that the affirmations of the nomadic subject are motivated by its *conatus* (*Ibid.*, pp. 2, 311; see Chapter 5, pp. 156-62). *Conatus*, she emphasises, is that which unconsciously impels the nomadic subject towards affirmative encounters and assemblages and, ideally, away from those that harm or restrict it (Braidotti 2011a, p. 18; Braidotti 2011b, pp. 149, 311).<sup>150</sup> She does, however, contend that the nomadic subject reflexively and retrospectively pays close attention to the needs of its own vitality. By doing so, it develops a ‘self-knowledge’ through which it both ‘learns to [empower and] reinvent [itself]’ and actively ‘desires’ to do so (Braidotti 2011b, pp. 34, 41, 154, 204, 221, 311; cf. Braidotti 2011a, pp. 18, 45).

Desire can be understood as the way in which *conatus* is expressed (cf. Spinoza 2001, pp. xix, pp. 106-7). Desire is a desire *for*: it is the way in which the conative drive of a subject is steered towards the formation of compositions – towards affective encounters and assemblages – with other non/human bodies in a given moment, in which the subject in question can become conscious of this impulse (cf. *Ibid.*, pp. xix, pp. 106-7). This is ‘desire’ in the Deleuzian sense of the term: not as lack, but as plenitude (see Deleuze and Guattari 2013a, pp. 1-9; cf. Gao 2013, pp. 406-20). Desire impels us ‘to express and to make things happen’ which, in relation to the *conatus* of the nomadic subject, can be understood to refer to the *kind* of affirmations it un/consciously strives to enact (Braidotti 2011b, pp. 34, 158). For the nomadic subject, ‘desire is an impelling and compelling force that is driven by self-affirmation or the transformation of negative into positive [affects]’ (*Ibid.*, p. 229).

This self-knowledge partly contributes to the constitution and activation of desire (cf. Sage, Vitry, and Dainty 2019, pp. 345-63). As Chapter 5 argued, the affective traces retained by our bodies – positive and negative, broadly speaking – alter our potential and, moreover, our motivation to act in the future; both muscle memory and knowledge were cited as the ways in which these traces accrete in our corporeal and cerebral bodies (see pp. 168-80). At any time, these residual traces can become active again by way of memory and affect our present vitality; as they do, they potentially catalyse new desires that impel us towards new inter/actions (see Sage, Vitry, and Dainty 2019 on ‘affective memory,’ pp. 345-63). As this happens, we can become aware of our needs.

As we recall our relationship with loved ones, for instance, and the ways in which we have encountered one another, the residual traces of these encounters and their intensities may wash back over us as we think back fondly. This resurgence might alter our present vitality –

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<sup>150</sup> See also Deleuze and Guattari on the ‘body without organs’ (2013b, pp. 180-98).

we may feel happy to recall these memories, or perhaps nostalgic; we might then also become motivated to seek out affirmations associated with these recollections.<sup>151</sup> We might feel the need to reach out to said loved one, through which we are un/consciously impelled to engage with the relevant means to do so – communication technologies, and so forth. Alternatively, we might want to listen to the music we associate with this loved one, and thereby engage with the ludomusical fields necessary for this encounter to take place. This is the expression of *conatus* as desire.

The self-knowledge of the nomadic subject is well-attuned to the affective non/human relations that are beneficial to its vitality, and moreover necessary for its affirmations to take place (Braidotti 2011b, p. 204). Likewise, the affective traces that form this knowledge can influence the nomadic subject's un/conscious desires for affirmation through their mnemonic resurgence (see *Ibid.* on 'nomadic memory,' pp. 31-2, 233). The *kind* of affirmation the nomadic subject desires depends on both its present surroundings, and the affective traces within its body that are currently active – which can act unpredictably and simultaneously (Braidotti 2011a, pp. 25, 41).

The self-knowledge of the nomadic subject catalyses its desires and acts as a guide, through which it can un/consciously discern a multitude of affective routes for affirmation to take place in the present conditions. The more developed and attuned the nomadic subject's self-knowledge, the greater their affective potential to fulfil their affirmations (cf. Braidotti 2011b, p. 311). The traces of self-knowledge feed into the imagination of the nomadic subject, like a creative resource (*Ibid.*, pp. 2-3, 124, 232, 295). This is particularly useful when the nomadic subject desires to find ways to overcome and transform negative affects (see *Ibid.* on 'nomadic thought,' pp. 1-3, 13, 212). Braidotti's metaphorical use of the phrase 'essential belongings' to describe the nomadic subject's ability to make an affirming 'home' for itself can thus be understood to refer to its self-knowledge: the traces of 'where it has been' that it deems integral to its affirmations. Through self-knowledge, nomadism thereby involves reflecting on where we have been, where we are going and, importantly, *how* we can get there (Henry, Jusová, and Westerman 2014, p. 152).

The nomadic subject's notions of where it belongs, who it is, desires to become, and where it can locate the necessary sources of affirmation in the present conditions – its 'home,'

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<sup>151</sup> Trauma, on the other hand – as traces of a negative affective encounter on the mind and body – is exemplary of a mnemonic resurgence that negatively affects the vitality of the body, which may then also give rise to desires that can lead to further harm.

in other words – inevitably and unpredictably shifts over time, season to season, day to day, moment by moment (*Ibid.*, p. 153). While the nomadic subject continually seeks out the affirmations it needs in the present moment, it is only ever ‘passing through’ the positions of identity it enacts (Braidotti 2011a, pp. 60, 64). It remains in flux, its attachments and interconnections are transitory, and only the traces of its ‘becomings’ remain, but not necessarily permanently. Its movements can at times be cyclical or seasonal, returning to familiar sources of affirmation and maintaining these relations as it needs, but its movements are always non-teleological (*Ibid.*, p. 57). The nomadic subject may set up bases for its identity, it may enact its affirmations as desired, but it only ‘connects [to assemblages of non/human others], circulates, and moves on’ in an unpredictable trajectory (*Ibid.*, p. 42). The nomadic subject does not desire to preserve the same, but to ‘become,’ ‘to change: [yearning] for transformation or a process of affirmation’ (Braidotti 2011b, pp. 34, 229).

Braidotti’s nomadic subject is not a counterclaim to or a dismissal of identity. On the contrary, nomadic subjects are simultaneously rooted and in transition, materially embodied and embedded yet processual. The nomadic subject hinges on the importance of possessing a sense of ‘self’ and belonging, while accounting for the fact that its identity has no complete, finite, or concrete form and is composed of multiple overlapping fragments; is unfixed, contingent, and constantly re-routing in unpredictable ways; it is not self-regulating, but relies on affirmation by way of affective encounters with other non/humans (Braidotti 2011b, pp. 4, 211, 214, 253; Braidotti 2011a, pp. 14, 18, 76; cf. DeLanda 2016, pp. 41-2).

## **6.2 Chiptune Fan Identity, Ludomusicality, and Nomadic Subjects**

In which ways, then, can Braidotti’s figuration of the nomadic subject help answer the primary research question of this study? In this section, I will argue that the relationship between chiptune fan identity and ludomusicality is nomadic – both in how it is shaped and how it persists – and that chiptune fans can be understood in the light of nomadic subjects. There are two key elements of Braidotti’s framework that can help explain this argument, and bring the insights of the preceding chapters together:

1. Nomadic subjects as simultaneously rooted and in transition
2. The nomadic desire to enact affirmation

In the two following subsections, each of these elements are explored separately in relation to chiptune fan identity and ludomusicality.

### 6.2.1 *The ludomusical shaping of chiptune fan identity: nomadic trans/formation*

As subsection 6.1.1 outlined, the nomadic subject must continually enact a sense of ‘self’ through the affective encounters that produce its affirmations. To recap briefly, ‘affirmation’ describes the ways in which affective encounters can shape ‘who’ we are by mobilising the traces that form the fluid maps of our identities – such as our mattering senses of (sub)cultural belongings and ‘homes,’ memories, and our current ideals about ‘who’ we are – in a way that empowers our vitality (Braidotti 2011a, pp. 17-8; Braidotti 2011b, pp. 3-4, 31-5, 151-3, 287-91). The affective process of ‘becoming,’ however, is by no means linear or teleological, predictable, or permanent. With this in mind, Braidotti describes the self of the nomadic subject as simultaneously rooted and in transition – simultaneously self-propelling and yet heterodefined – in that while it retains, and seeks to enact, a sense of identity, the *kind* of identity it embodies is subject to the affective encounters it endures.

In many ways, Braidotti’s description of affirmation parallels this study’s definition of ‘homecoming.’ As I have argued over the course of this study, the ‘homecoming’ of chiptune fandom describes the ways in which fans experience chiptune in relation to their identities (see Chapter 1, pp. 47-64). Like Braidotti’s definition of affirmation, the ‘homecoming’ of chiptune fandom involves both the hauntological resurgence of mattering connotations as well as the emergence of a renewed vitality, both contoured by the ludomusical encounters between – foremost – chiptune’s primary non/human mediators. As is also the case, the ‘homecoming’ of chiptune fandom is by no means linear, predictable, nor is the vitality it revitalises permanent (cf. Chapter 5, pp. 168-80). Consequently, chiptune fans must keep enacting their ‘homecomings’ through ludomusical encounters. Now introducing Braidotti’s notion of nomadically ‘becoming’ a self as simultaneous rootedness and transition, we can illuminate the relationship between the ludomusical processes through which the ‘homecoming’ of chiptune fandom emerges, and the ways in which this shapes chiptune fan identity. To illustrate this theoretical point, the chiptune subgenre of 8-bit reggae presents an apt case study.

Briefly discussed in the Introduction of this study as the focus of Nova’s research, the chiptune subgenre of 8-bit reggae is where ‘Jamaica vibes meet computer music’ as chip-musical technologies and remediation strategies are ludomusically woven with the dub tactics, off-beat chords, and ‘riddims’ of reggae (Spada 2013, p. 37; Nova 2014, pp. 10-8; see p. 24). *Måse Dub*, an 8-bit reggae track composed by Norwegian chip-musicians Helgeland 8-BIT Squad, encapsulates the resulting feel of this subgenre’s ludomusicality (2012).<sup>152</sup> A burst of

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<sup>152</sup> Available here: [https://www.youtube.com/watch?v=\\_Jy2\\_4QAxGQ](https://www.youtube.com/watch?v=_Jy2_4QAxGQ)

filtered white noise opens the track, and in swirls fragments of vocal echoes typical of reggae and dub musical styles (cf. Nova 2014, pp. 27-39). Underpinning these vocals, we hear off-beat chords sounded by pulse waves. In bar 5, at 0:21 in the video upload, a triangle wave bass enters the arrangement in syncopation with the offbeat chords. At the end of bar 9, 0:27 in the upload, a crescendo of filtered white noise frequencies leads into the main body of the piece.

The instrumentation throughout the piece is predominantly sounded through PSG constraints, with the exception of the percussion. Where many 8-bit style chiptunes utilise white noise percussion as part of a subtractive synthesis palette, in *Måse Dub* we can hear samples of snare drums, gritty crash cymbals, and a 1978 Roland CR-78 analogue drum machine. The rhythmic programming of the piece is typical of a reggae ‘riddim:’ the kick drum is syncopated, while the snare falls on the third beat of every bar to form the rhythmic anchor of the piece (cf. *Ibid.*, pp. 26-7, 32-5, 87-9). Analogue hi-hats and percussion support this rhythm, and chipsounds that echo the electronic sound effects of early ‘space shooter’ video games are used for rhythmic decoration. A lone pulse wave – with a timbral quality that suggesting the mediation of the Commodore 64 SID– forms the main descending melody line.

As discussed before, Nova’s research into 8-bit reggae follows Gilroy’s ‘roots and routes’ methodology (Nova 2014, p. 18; Gilroy 1993, p. 8). Through this methodology, Nova’s study traces the history of the technological and (sub)cultural roots of both chiptune and reggae, and the routes through which they have become intertwined. In its ludomusical blend of remediated PSG constraints, off-beat chords and Jamaican riddims, the ‘homecoming’ of 8-bit reggae illustrates the nomadic relationship between identity and music: the *simultaneity* of ‘becoming’ rooted and in transition through ludomusical encounters.

8-bit reggae foregrounds the importance of roots, and this becomes apparent in the interviews collated by Nova. As nomadic subjects, 8-bit reggae chip-musicians carry with them and embody the ‘roots’ of their mattering capital, which is mapped together across multiple different aspects of their identities. 8-bit reggae artist Naff Natty, for instance, shares the following on their sentimentality for chiptune in an interview:

[8-bit reggae is] part nostalgia, they’re sounds of our childhood, sound with which we relate. The average droid dubber has bleeps and bloops engrained in his soul. (In Spada 2013, p. 38)

Along similar lines, when asked to define 8-bit sounds are by the interviewer, instead of just offering a purely technical answer 8-bit reggae musician DVAnt displays the ways in which

their chipsound knowledge is mapped with his contextual, musical, and self-knowledge structures:

The sounds of my youth with arcades, going round me (*sic*) mate's house [I asked] why it said "16-bit" on my SEGA Mega Drive. He told me it was because there are 16 bits inside (components) that make it work. Therefore, by [that] logic, 8-bit sound is derived from 8 components. I'd say those 8 components are – bass, drum, skank, melody, peace, love, unity and joy! (*Ibid.*, pp. 37-8)

The notion of 'roots' – and, moreover, roots that are gained through the residual traces of ludomusical encounters – is specifically mentioned in an interview with 8-bit reggae artist Disrupt (Jahtari):

[Chiptune is] basically roots music, it's just that our roots aren't in a Kingston ghetto but in a more run-down industrial place in the 80s and 90s [...] game soundtracks are a massive influence. Without noticing you listen to them for hours and days on end, I didn't realise until years later how much of an impact they actually had on building our musical taste. (In Nice Up 2013)

Mattering notions of chiptune's 'authenticity' also play a role in the capital of 8-bit reggae artists. Chip-musician Goto80, who also composes 8-bit reggae using the Commodore 64, is particularly thorough on this point in his interview with Nova. For Goto80, the SID chip of the Commodore 64 – like any form of PSG – comes with many idiosyncratic constraints that present a ludomusical challenge for the composer. In addition to the constraints of its three monophonic audio channels, four subtractive waveforms of sawtooth, triangle, pulse, and noise, and unique filters and effects, the SID chip is also subject to bugs and glitches. As we heard in Chapter 3's case study of 'Gloria,' for example, in which hardware SID chips created a gritty distortion in relation to the amplitude passing through their filters, which is markedly absent from their emulated counterparts.

Goto80 cites similar issues that relate to his approach to the factors of rhythm, instrumentation, and ornamentation (in Nova 2014, p. 84). As with chiptune tracker sequencer composition, such reggae dub tactics as delay and echo had to be coded separately with every repetition and modulation of volume. Yet, the swing of reggae riddims is difficult to arrange within the confines of hexadecimal code and the cell structure of tracker sequencers (*Ibid.*).

The option of white noise, ring modulation, and filter sweeps for percussion presents the challenge of getting ‘good percussive sounds’ that have a ‘snappy’ quality, as Goto80 describes (*Ibid.*). Ornamentation is a challenge in all forms of hardware and tracker sequencer composition. But as Goto80 emphasises, this is particularly difficult in the case of 8-bit reggae because, he claims in a display of his mattering capital, reggae is ‘supposed to sound like it’s being played live [...] by a human’ (*Ibid.*).

Like in Chapter 3’s case study of ‘Gloria’ and the Commodore 64’s glitches, Goto80 enjoys the constraints, glitches and bugs of Commodore 64 hardware. He goes so far to say that he could fix these issues by switching to software emulation, but he deliberately chooses not to. As challenging as the ludomusical field of Commodore 64 hardware is, for Goto80 it engenders a desirably messy, unique and, as many other chiptune fans also claim, ‘raw’ timbral quality (*Ibid.*). The unpredictability of the SID’s glitches and bugs – its pops, clicks and distortions, the unique feel and unusual timbral qualities they add to the resulting compositions – are intentionally harnessed in Goto80’s 8-bit reggae (*Ibid.*, pp. 84-6). The out-of-control ‘feedback of the machine’ is an important aspect mapped into Goto80’s chiptune capital, which resonates with his mattering perceptions of ‘authenticity’ and their enjoyment of ludomusical creativity (*Ibid.*, p. 85). For Goto80, an integral factor in the beauty of 8-bit reggae – and its ludomusical ‘homecomings’ – are the imperfections of technology.

8-bit reggae artists also possess capital in reggae’s musical and technological aspects – the rhythmic techniques that constitute the feel of a riddim, dub tactics, off-beat chord stabs, and the emphasis on the syncopated bass, for instance (cf. *Ibid.*, p. 83). Notions of ‘authentic’ roots in the technology are present in this form of capital in a way that parallels chiptune fandom. Reggae music technologies of the 20<sup>th</sup> century also carried their share of constraints. Nova documents the ways in which the emergence of early digital music technologies in the 1980s – especially those on cheaper end of the spectrum – altered reggae music production and gave way to new forms of achieving dub tactics mediated by early digital constraints (*Ibid.*, pp. 39, 72-78, 81-2).

Just as 8-bit reggae musicians possess capital in the mattering aspects of chiptune’s bleeps, bloops, and PSG constraints, and reggae’s dub tactics, they also possess capital in the mattering aspects of reggae and Rastafarianism, and Jamaican diaspora. The mattering roots of African American music and history not only haunt reggae, but its traces are also engrained into the identities of many 8-bit reggae artists and fans; others have no connection to these roots at all, but still resonate with Rastafarianism or reggae’s musical ethos (cf. *Ibid.*, pp. 25-33, 77, 87-94).



Within the traces that form the identities of 8-bit reggae artists, their roots in both chiptune and reggae – and the capital that formed through the traces of these elements – are mapped together in relation to their mattering connotations, spanning the knowledge structures of chip/reggae sound, context, music, and self, nomadically blurring pre-existing boundaries and contexts (cf. Braidotti 2011a, pp. 26, 56). 8-bit reggae is a way for artists and fans to ‘get back to,’ and even nomadically hold on to, ‘their roots’ as a form of ‘homecoming’ (cf. Nova 2014, pp. 38, 78). As chip-musician Orthodox Conqueror states:

Planned obsolescence does make me sad, nothing is built to last these days! The only thing that lasts are our memories, so we are bringing them back through the music. I don’t make music strictly for nostalgic purposes, though [...]. (In Spada 2013, p. 38)

This notion of ‘getting back to roots’ through the practice of 8-bit reggae also ties in with mattering notions of ‘authenticity,’ as 8-bit reggae artist wellwellsound expresses:

8-bit allows [us] to get back to the roots [of] and digital sounds, this know-how, a certain technological simplicity that gives an unmatched power. It’s a way to return to the essence of reggae from the 1970s and the 1980s with crappy machines, simple sounds way better than the hi-quality synths from the 2000s. (In Nova 2014, p. 78)

Goto80’s interview also makes this mattering connection between his capital in chiptune, and his capital in reggae, displaying an affective intersection between the mattering ‘authenticities’ of chiptune craftsmanship and achieving the distinctive feel of reggae:

Sometimes [when using the Commodore 64] you make lucky mistakes that give that [dub] feeling, sometimes you have to make an effort to get it in there. It’s always a challenge [...] [to] tap into the reggae world. This is tricky, since chip tools are so strongly connected to traditional Western conceptions of rhythm, tonality, and arrangement. [Something] else that unites dub and chipmusic is that both have a very strong focus on the tools or the process. [There] is something robust at the base of chip and dub with a strong connection to technology [...]. (*Ibid.*, pp. 83-4)

This resonance between PSG constraints and reggae's 'authenticities' is also observable in my survey data, as can be gleaned from the response submitted by participant 35, age category 36-45:

I enjoy hearing pop music being re-contextualised in general – the idea of a “version” is very central to both reggae and dance music anyway. I think that chiptune versions can strip a composition back to its basic level and this can be very interesting in itself – you can hear the song writing and emotion more clearly for all the bells and whistles of modern production being removed. (See appendix, p. 229)

Chip-musical technologies and their dub/riddim programming haunts 8-bit reggae with simultaneous mattering connotations that span different genres as well as different aspects of fan identity. In the 'homecoming' of 8-bit reggae, these aspects ludomusically and hauntologically conflate, resulting in the emergence of multiple sources of 'home' at once. And through the hauntography of 8-bit reggae, artists and fans can take their roots with them. This is particularly interesting in the case of reggae's relationship with diaspora.

Nova discusses the relationship between reggae and Jamaican diaspora and highlights the ways in which it becomes a means of expressing a cultural heritage, and belonging, away from 'home' (2014, pp. 38-9, 77-8, 80). Nova also points to the ways in which, although some black Jamaicans have never visited Africa, they still yearn for a return to this mythical place – one that 'never existed' as it lives in their imagination – through their attachments to reggae (*Ibid.*, pp. 77-8, 84). He also speculates on this relationship in the case of chiptune nostalgia – especially that experienced by younger fans. He claims that this experience, too, is one of sentimentality for a 'golden age' of late 20<sup>th</sup> century video games, (then) new technologies, and visions of the future that never came to be (*Ibid.*, p. 80). Through the methodological lens constructed in this thesis, we can now understand that the hauntography of 8-bit reggae also conflates these ghosts and their up/rooted rêverie (cf. Chapter 4, pp. 148-52). The diaspora for a mythical vision of an African utopia and an imagined 'golden age' of 20<sup>th</sup> century video games both emerge as forms of 'homecoming' through the hauntological mediation of memory and temporality, engendered through 8-bit reggae's hauntography. They become forms of roots, or 'homes,' regardless of whether the fan lived through or experienced either time and/or place in person.

While 8-bit reggae artists hauntographically conjure many of their roots, they remain in transition through chip-musicianship and its ensuing ludomusical encounters. 8-bit reggae artist Kevin Martin reveals that he is always ‘on the lookout for new forms of expression’ using chiptune’s constraints, and that in his ludomusicality he does not wish to simply reproduce the roots of his inspirations:

We [...] felt it would obviously have been a total mistake to try and reproduce Jamaica in Hackney, so instead, we revelled in our own mutant reinterpretations and alien disfigurements. (In Nova 2014, p. 76)

8-bit reggae inspires, as Disrupt claims, a ‘hunt for uniqueness:’ a means to carry with them the ‘essences’ of chiptune and reggae while at the same time reinventing both genres in a new form of ludomusical creativity (*Ibid.*). Through the aesthetic and technical difficulties of chiptune and reggae – through the hauntography of its remediation – the ludomusicality of 8-bit reggae forces its musicians to play with its self-imposed restrictions and (sub)cultural roots and to produce something new in their routes (cf. *Ibid.*, p. 89). As Naff Natty elaborates further:

Dubbers throughout the history of reggae have been restricted through a certain amount of poverty – they’ve pushed boundaries and created magical sounds with whatever cheap gear they had to hand. Now I’m not saying that any of us are so restricted nowadays, but I think 8-bit stays true to that vibe. It’s a limitation, and limitations are useful. (In Spada 2013, p. 38)

Orthodox Conqueror, similarly, does not just wish to create 8-bit reggae for nostalgic reasons; he also wishes to ‘keep coming up with ways to make original and innovative sound’ (in Nice Up 2013). Through its crisscross simultaneity of roots and routes – through the ‘homecomings’ that emerge through its ludomusical encounters – 8-bit reggae’s relationship with the identities of its fans and composers reflects the simultaneous rootedness and transition of the nomadic subject (cf. *Ibid.*, p. 89).

As Braidotti argues, the ‘becoming’ of identity sees the affective stringing together of multiple and often unpredictable traces of the ‘self’ in a way that enhances the vitality of the subject. Ludomusical encounters with 8-bit reggae can be understood to enact the very same process on fans in relation to their identities. The ‘homecomings’ of 8-bit reggae see the revitalisation and stringing together of multiple aspects of fan identity – spanning chiptune’s

traces and beyond as multiple sources of ‘home’ combine together to empower the listener. Chang’s ‘Bird World,’ as we saw in Chapter 3, potentially enacts the very same ‘becoming’ on the identity of its listeners: awakening and stringing together the ‘homecomings’ of multiple and mattering aspects of VGM capital in a single ludomusical experience. The inter-mattering connections between Level 42’s track ‘43’ and chiptune, and vice versa Fearofdark’s cover version, also sees this nomadic ‘becoming’ of identity take place. Yet the ludomusical re-awakening of these traces are always subject to change, distortion, new playful avenues.

Through Braidotti’s insights on the simultaneous rootedness and transition that takes place in the ‘becoming’ of identity, we can understand that chiptune ludomusically shapes fan identities through a ‘trans/formation’ that is nomadic. Ludomusical trans/formation describes the ways in which chiptune’s ludomusical encounters shape fan identity: the simultaneity of chiptune’s hauntological capacity – emergent mattering identifications – and renewed vitality, while at the same time accounting for the ways in which chiptune fan identity is shaped anew through ludomusical play. The ‘homecomings’ of 8-bit reggae illustrate this point perfectly: the roots of its memories, nostalgia, diaspora and techno-cultural ‘authenticities’ emerge through the hauntography of its remediation practices. Yet, through the ludomusical play that enlists these roots, they gain a renewed vitality as well as – potentially – changing through the affectivity of their encounters, leaving new traces in the bodies of musicking fans. The identity of 8-bit reggae artists, therefore, undergoes a simultaneous ‘projecting and dissolving’ through its ludomusical encounters, and this can be said through all ways in which chiptune ludomusically shapes fan identity (cf. Slobin 1993, p. 41).

As section 6.1.1 also outlined, the ‘self’ of the nomadic subject – its present agency, emergent qualities and vitality – is provisional on the assemblages in which it is currently present. If we view chiptune fans in relation to their identities as nomadic subjects, ‘who’ they are at any given time – and their un/conscious, subjective perception thereof – can also be understood to emerge through a nomadic process of ‘becoming with.’ Their present actions and dispositions, memories and thoughts, feelings and the qualities of their vitality are not entirely regulated by their own agency, nor are they entirely at the mercy of chiptune’s non/human agencies; their ‘self’ is constantly shaped through an affective chemistry across webs of multiple relations *between* themselves and chiptune’s non/human others (cf. Braidotti 2011a, p. 25; cf. Chapter 5, pp. 168-76). In her work on distributed subjectivity, Kassabian makes a similar argument:

[At] some places at some points in time, I will – or will not – be included in any given identity category. While such identity categories seem static and positional, they are anything but, and they are constituted microsecond by microsecond according to affects that are in motion through and across a field that might be constituted of body parts, or verbal texts, or sounds, or machines, or groups, and most likely all of the above. [Affect] both conditions and enacts identities and identifications, and it does so not within bodies, but across them (2013, pp. xxvii, xxix).

We can then also understand that, to paraphrase Frith, ‘different sorts of [ludomusical] activity may produce different sorts of [chiptune fan] identity, but *how* [chiptune ludomusically works] to form identities is the same’ (emphasis in original 2002, p. 112). Just as the self of the nomadic subject changes according to its current assemblage relations, the ‘homecomings’ of chiptune fandom can also be understood as a ludomusical ‘becoming with’ of identity (cf. Chapter 5, p. 174). The *kinds* of ‘homecomings’ chiptune fans experience and ‘who’ they become as a result, in other words, will inevitably alter depending on their current mattering sensibilities, and the ludomusical makeup of the chiptune assemblages in which they are a part.

The chiptune assemblage constituted through cTrix’s performance at BlipFest, for instance, would ludomusically shape very different trans/formative ‘homecomings’ to those shaped between participant 11, their headphones, their chip-musical technologies, and the other passengers and passing scenery on their travels (see participant 11 in Chapter 1, p. 71). As we have also seen in Chapters 2 to 4, differences in mediation between chip-musical technologies and PSG remediations strategies, chiptune capital and literacy competencies, and chipsound timbres can alter chiptune’s hauntological qualities. In their interview with Carlsson, chip-musician little-scale illustrates this contention by describing the ways in which their ludomusicality is affected by different chip-musical technologies and PSG remediation strategies:

I write angrier music with the [Atari 2600] than I do with other systems. I write more mellow music with the SEGA Mega Drive than with something else. SEGA Master System always wants to sound happy (I have to teach it otherwise!!) - I think that last one is due to nostalgia. The above three examples I think come down to timbre perhaps? Or at least I feel that plays a role. [...] Number of channels perhaps, and preconceptions of the type of music that the

particular console “should” have e.g. SEGA Master System with happy, high pitched detuned lead lines. (In Carlsson 2010, p. 38).

As detailed in little-scale’s interview, different forms of chip-musical technologies encourage them to ludomusically exercise their chip-musicianship competencies in different ways. As a consequence, little-scale (typically) experiences different forms of ‘homecomings.’ little-scale also gives insight into the mattering aspects of his chiptune capital. As he states, he carries with him preconceptions on the ‘type of music’ that should sound from each of the listed chip-musical technologies and their chipsound qualities. Due to these mattering preconceptions, each of these mediators will form different chiptune assemblages as little-scale begins to ludomusically play and, consequently, form different kinds of chiptune ‘homecomings,’ which he captures in terms of ‘angrier music’ for the harsh timbral qualities of the Atari TIA, ‘mellow music’ for the FM timbral qualities of the SEGA Mega Drive, and ‘happy’ sounding for the chirpy 8-bit bleeps of the SEGA Master System, with a hint of nostalgia.

Different kinds of PSG remediation strategies, ludomusical fields of chip-musical technologies, and the routes through which chiptune’s primary mediators ludomusically interact with one another will nomadically shape fan identities in different ways. However, all forms of chiptune ‘homecoming’ involve the same ludomusical process of trans/formation. Thus, chiptune fan identity remains in continual ‘becoming,’ and like nomadic subjects, chiptune fans ‘connect, circulate, and move on’ after their ‘homecomings’ have replenished their vitality (cf. Braidotti 2011a, pp. 42, 57-8, 60).

### ***6.2.2 The ludomusical longevity of chiptune fan identity: conatus, chiptune capital, and nomadic desire***

[I] think I’ve always been attracted to the “8-bit” sounds ever since I was a kid. I used to turn on *Super Mario Land* on my [Game Boy] advance and let the music play without actually playing the game. (Survey participant 40, age category 19-25, see appendix, p. 229)

I’m drawn to the purity of 8-bit waveforms and in many chiptunes, the reduction down to four tracks (appropriate for a Gameboy). (Survey participant 34, age category 26-35, see appendix, p. 229)

Building on insights from Chapter 3, the final section of Chapter 5 argued that the ludomusical traces chiptune fans capture and retain within their capital can alter their own ludomusicality. In the discussion of the cTrix case study, participants 11 and 14 of my survey were cited as examples of chiptune fans whose experiences with the live chiptune events – namely a live performance by Redacted for participant 11 and Superbyte Festival for participant 14 – had catalysed their own creative ludomusical adventures into the ‘DIY mentality,’ part nostalgia, and part creative circumvention of constraints that chiptune so richly affords (see Chapter 5 p. 176-8).

Once captured and retained as capital, the way these traces can alter the literacy of chiptune fans illuminates a key aspect in the ludomusical shaping of their identities: the impulsion *towards* their ludomusical encounters – particularly in view of specific forms of ‘homecomings.’ Chiptune capital also plays a significant and affective role in the special attraction that keeps fans coming back, ‘honeying’ them to play with chiptune’s basic waveforms, bit-crushed samples, and experience the intensity and vitality of such deceptively simple technologies time and time again (cf. Voegelin 2014, p. 113). We can explore this aspect of chiptune fan identity in light of Braidotti’s approach to *conatus*, self-knowledge, and the nomadic desire for ‘becoming:’ chiptune capital performs the equivalent dual role to the nomadic subject’s self-knowledge.

As argued in Chapter 3, the human agency of chiptune literacy becomes active through the intersection of its three component building blocks: the actant of chiptune capital, the personal locus, and chiptune competencies. The building block of the ‘personal locus’ acts as the central hub of this process. To recap briefly: the personal locus is described by Potter as ‘composed of goals and drives [...], our energy and our plan,’ it is the nucleus of our un/conscious decision making as we navigate our media usage (Potter 2013, p. 15). Our personal locus is fed by the actant of our knowledge structures which, through their ongoing development, we become able to navigate future media engagements with greater expertise and familiarity (*Ibid.*). Chapter 3 argued that chiptune capital feeds into a fan’s sensibility of what matters in the present moment, through which they then un/consciously mediate the ‘homecomings’ of their chiptune fandom through their chiptune literacy competencies (Chapter 3, pp. 122-9). Combined with the insights afforded by affect theory and ludomusicality discussed in Chapter 5, we can now understand how chiptune capital continues to develop, and potentially change, through subsequent ludomusical encounters and their subjectively captured traces. Braidotti’s ideas around the nomadic subject’s self-knowledge can enhance this argument, particularly in regard to how the actant of chiptune capital *becomes*

active, steers the kinds of ludomusical encounters that chiptune fans pursue and, consequently, plays an important role in the ongoing shaping of chiptune fan identity.

The relationship between self-knowledge, *conatus* and desire, and ‘becoming’ proposed by Braidotti enhances Potter’s understanding of the three building blocks of media literacy. *Conatus* both names and elaborates on the ‘energy,’ the ‘motivations’ and the ‘drives’ that Potter describes about the personal locus. Desire – describing how conative drives are beckoned, channelled, and of which the subject can become aware – clarifies the ways in which the traces that form our knowledge structures mnemonically affect the motivations of our personal locus. Desire is, as Braidotti emphasises, the desire to express and to make things happen, particularly in view of affirmation. If we then consider media usage as an affirmative means through which we can enhance our vitality and shape a sense of identity, then the affective traces of our knowledge structures can also prompt the ways in which we are drawn, at times with succinct purpose, *towards* our media encounters in the first place.

Braidotti’s approach to desire lends a new interpretation to the ‘desire for connection’ that Jenkins argues is the very heart of all participatory culture (2006, p. 59; Jenkins 2013, pp. 237, 282; cf. Bury 2018, p. 123). In the context of this study’s focus and Braidotti’s nomadic subject, we can interpret this as the desire to encounter, to connect and to form assemblages by way of playful means, with the vital non/human others that constitute a given fandom in order to enact ‘homecomings’ – fannish ‘becomings’ – in an affirmative way (see Garner 2019, p. 8; cf. Graeber 2007, p. 62; cf. Lancaster and Mikotowicz 2001 on desire and roleplay, pp. 2, 10-3).

The ludomusical traces that comprise chiptune capital can be understood to perform the same role as the self-knowledge of the nomadic subject in directing its *conative* drive for ‘becoming.’ Chiptune capital, in this reading, catalyses a ‘fannish desire’ for ‘homecoming:’ activating through memory, the traces of chiptune capital can affect the present vitality of the fan in question (and thereby their personal locus), and un/consciously steer the kind of affirmations said fan might desire in the moment (cf. Chapter 3, pp. 116-22). This fannish desire for ‘homecoming’ describes the affective impetus behind the ludomusicality of chiptune fans. It is this desire that drives fans towards their ludomusical encounters, into choosing PSG remediation strategies and the ludomusical fields of chip-musical technologies, into their listening practices, chip-musical creativity, live performances, and into both musical and communal engagements with fellow fans (cf. Garde-Hansen and Gorton 2013, p. 33). Such an impetus can be traced in the testaments of many other chiptune fans and musicians; one notable example is participant 43 from my survey.



In comparison with other chiptune fans, participant 43 is not the most lengthy or meticulous in their response. However, in so few yet important words, their response to my survey question ‘could you describe your introduction to chiptune? How did you get into it?’ captures the relationship between chiptune capital and desire in the context of chiptune fan identity:

Being a kid in the 90s helped a lot with my intro to chip music. Playing the NES and SNES both a whole lot, but it [was not] something I sought after til (*sic*) much later. It was the only ‘electronic music’ I liked, so when I tried making music on my own, I gravitated to those types of sounds. (Age category 26-35, see appendix, p. 229)

In this answer, we can observe an integrated display of participant 43’s capital, which maps together mattering aspects of their chipsound, contextual, musical, and self-knowledge structures. We learn about their initial ludomusical encounters with chiptune – through the commonly cited context of video gaming as a child – and we also gain insight into the contexts of which video game platforms and kinds of chipsounds were involved in these encounters: the 8-bit NES with its bleepy 2A03 chip, and the 16-bit SNES with its bit-crushed, PCM-based SPC700 chip. Participant 43 then reveals their personal enjoyment of chiptune as a form of ‘electronic music,’ that they are literate in chiptune’s timbral characteristics and that they are musically creative.

The closing sentence of their response, however, is the most relevant. Participant 43 builds on the foundations of their chiptune fandom and nods to its ongoing development. They describe how they continue to enjoy chipsounds, use them in their own ludomusical creativity and, interestingly, that they ‘gravitated’ towards these timbral qualities. While participant 43 does not reveal any specific reasons or personal identifications that chiptune evokes for them, they do acknowledge that they became actively drawn towards ludomusical encounters with chiptune in view of creativity and enjoyment. This response aptly captures the fannish desire for ‘homecoming.’

In participant 43’s survey data, we can see evidence of how chiptune capital acts in the same way as the nomadic subject’s self-knowledge. The ‘gravitation’ they describe is a *conative* drive towards affective encounters with other bodies for the enhancement of vitality and self-expression. The fact that this motivation is for musically engendered affirmations and desire for chiptune ludomusicality specifically, illustrates the argument that affective traces can

alter the future affectivity of the subject; in this case, the affective potential of participant 43's ludomusicality. For participant 43, the ludomusical traces of their video gaming encounters with the chipsounds of the NES and SNES have, to paraphrase Kassabian, 'become the stuff of future affective responses' (cf. 2013, p. xiii). As implied in participant 43's narrative, the traces of their initial ludomusical encounters with chiptune have subsequently fuelled the ways in which they desire 'homecoming,' steering them towards future encounters and influencing the ongoing development of their chiptune fan identity.

Sparse though their survey data may be, we also get an insight into how the ludomusical traces of participant 43's chiptune capital also feed into their chiptune literacy and, thereby, functions as a resource through which they can tailor their desired 'homecomings.' For instance, participant 43 states that they enjoy both 8-bit and 16-bit chipsounds, which potentially stems from their joyous encounters with video games in their formative years with both 8-bit (NES) and 16-bit (SNES) systems. The use of chiptune hardware is also cited by participant 43 as their go-to in their own ludomusical creativity. They elaborate on this in their answer to the survey question 'could you describe what you find appealing about chiptune? What do you enjoy about it?' They state:

Using chiptune as an instrument is limiting, but within those limits allows a whole other perspective of play. The focus is shifted when composing and you find yourself being more meticulous, trying to get the most out of so little. (see appendix, p. 229)

Participant 43's claims that these limitations encourage them to become 'more meticulous' in chiptune composition, and that they playfully enjoy 'trying to get the most out of so little,' can be attributed in-part to the notions of 'authenticity' sought after by many chiptune fans. In relation to participant 43's earlier answer, we can see the ways in which the ludomusical traces of their chiptune capital have informed that 'gravitation' towards new encounters with chiptune's sounds and playful constraints.

Through the cultivation of their chiptune capital, participant 43 becomes actively aware of which aspects of chiptune matter to them and thereby, like the nomadic subject, of where and how they can enact their desired 'homecomings' (cf. Chapter 3, p. 122). Participant 43's chiptune capital enhances their ability to discern and tailor the necessary ludomusical routes for their desired 'homecomings' to take place. The use of the term 'routes' here referring to the ways in which participant 43 potentially exercises their competencies in access and operation:

the ways in which they access chipsound by way of PSG remediation strategies – with hardware PSG mediation in particular having a greater mattering significance – and the ways in which they might then operate the ludomusical fields of their chosen chip-musical technologies (cf. Chapter 5 on ‘ludomusical fields,’ p. 162).

Segments from a 2015 interview with chip-musician TORIENA present a similar case study to that of participant 43:

Q. How did you first get into making music? How long after did you start making chiptune music and why?

There was no definitive reason why I set out to start making my own original music. But when I was a junior high student and (this may sound a bit audacious) I felt as though there wasn't any music out there that matched my preferences or met my needs. So I suppose that feeling was the biggest factor in why I started making my own music. Also, I have loved music for as long as I can remember because I grew up with a family who loves music. When I was in high school, I had an overwhelming desire to play original songs in a band. But my parents were against it, so I wasn't able to. In the meantime, I got into artists from Warp Records and was drawn to electronic sounds. Eventually I found myself wanting to make techno music. In my 3rd year of high school, on a whim I went to an Internet label event for the first time, and was instantly fascinated by the high-volume electronic music coming from speakers. That moment spurred me into making my own electronic music. As soon as I became a university student and started living by myself, I bought Cubase 6 and started making hard and minimal techno music. I joined a band club that mainly performed original songs and I had a lot of fun with them. One of the alumni from that club [asked] me to start making chiptune with him. So we went to a café in Kyoto called Café la siesta. Miraculously, the café owner let us use an LSDJ cartridge that had been sitting around and we started making songs with that.

Q. What brought you to the Game Boy as a musical instrument?

[The Game Boy] plays direct and sharp sounds. Although many people say that electric sounds are very monotone and don't express any soul, I believe there is soul in its sound. [I] really like the sound of the Game Boy. It comes directly out of the built-in chip in the form of a pulse or triangular sound wave. It's like the chip is screaming out its feelings. Making it into an instrument and having it play music that is an audible expression of my heart and soul is what attracted me to it. (In Richey and Suzuki 2015)

TOREINA's choice of wording resonates with participant 43's use of the term 'gravitation.' TOREINA describes the frustration with not being able to find music that matched her 'preferences and needs' and mentions an 'overwhelming desire' to play original music in a band. After encountering artists on the Warp Records label – one that specifically centres on techno and other electronic music genres – these ludomusical traces subsequently drew TOREINA, as she writes, towards further ludomusical encounters with electronic sounds. This is another example of the fannish desire for 'homecoming' by ludomusical means, 'spurred' on further in a creative direction, again in her own words, by the Internet label event.

Yet, there was a certain *something* about TOREINA's introductory ludomusical encounter with the LSDJ and the Game Boy that resonated with her in particular. Her description of the way in which the Game Boy's sounds come directly from the built-in chip, and that this factor contributes to its uniquely 'direct,' 'sharp' sounds and 'soul' can be understood as a claim of chipsound 'authenticity' (cf. Chapter 4, p. 148). This description, in a way, also parallels participant 34 acknowledgement of her own preferences and needs. Her description of her own 'heart' and 'soul' alludes to the personal, the intimate, and to also that which is 'authentic' to her.

For TOREINA, the initial ludomusical encounter between her own sense of her preferences and needs, and the 'screaming feelings' of the Game Boy's mediation evoked a profound subjective resonance. The ludomusical event generated by the encounter between her own 'soul' and the 'soul' of the Game Boy – a coming together of vital ludomusical materials – was something she subsequently mapped into her capital as a means through which she can affirmatively enact her desired 'homecomings:' to express audibly '[her] heart and soul' (in Richey and Suzuki 2015). For this reason, the ludomusical traces of this defining encounter are a key reason that the Game Boy continues to remain a cornerstone of her chip-musicianship to this day. Once again, the case study of TOREINA's pathway to discovering chiptune – and subsequent ongoing attraction to the Game Boy's unassuming, yet dynamic and characterful

ludomusicality – is another example of the nomadic relationship between *conatus*, chiptune capital, and desire in the ludomusical shaping of chiptune fan identity.

Braidotti’s contention that the nomadic subject desires not only affirmation, but also a transformative reinvention of the self also applies to the fannish desire for ‘homecoming.’ In the context of fandom, we can understand that desire is also catalysed by the mattering sensibility informed by chiptune capital, through which fans can creatively and imaginatively actualise their ‘homecomings’ in order to mediate mood, overcome boredom, pain, and so forth (cf. Grossberg 1992b, p. 164; cf. Hassan 2014, p. 67). The fact that TOREINA could not find music that matched her needs, and also that her parents disapproved of her wish to join a band, can be seen as a negative affect that impeded the ludomusical actualisation of her desires. While she discovered chiptune on a whim, the self-contained and practical means of the Game Boy became an alternate ludomusical route through which she can express herself.

A similar process can be observed in a post by a user of the *Chipmusic.org* forums going by the handle of Redacted .<sup>153</sup> Redacted ’s forum post is made in response to Redacted ’s, initially discussed in the opening of Chapter 5, in which they write:

I understand [ Redacted ] and feel a great deal of empathy for [their] situation. As a kid I used to make up “video game songs” in my head constantly for lack of a way to express myself. Now I am an adult I can translate the feeling of those memories into actual music. It’s something I do for myself, not strictly as nostalgia, but as a statement of intent towards the world. Music is the sharing of translation and feeling into an accessible format. I think that Chiptune has a tendency to be sincere and poignant, because of its simple/limited nature. I like that. (2014)

Redacted first expresses an understanding and empathy for Redacted ’s situation, who, if we recall their post in the opening of Chapter 5, describes how chiptune became an important means of self-expression and belonging in times of isolation (see p. 152). From a Braidottian perspective, chiptune is Redacted ’s means to create an affirming, fannish ‘home’ whenever they desire in order to counteract the negative affects of isolation and lack of belonging (cf. 2011a, pp. 45, 65). Redacted ’s forum post presents a similar case. Redacted mentions a ‘lack of a way to express’ themselves which, while this might not be a negative

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153

Redacted

affect that causes grave harm, their later forays into musicianship on this basis strongly suggest that there was a desire to overcome this lack. For Redacted , Redacted , TOREINA, and participant 43, music is a key means through which they are able to enact their ‘homecomings,’ actualise their self-expression, and to share and translate, as Redacted writes, the desires that arose from the traces of their childhood memories. Chiptune also came to fulfil that role for Redacted in a way that resonates with these other fans, and likewise all those who desire chiptune for reasons of ‘authenticity.’

While the link between video games and chiptune ludomusicality is not concretely stated in Redacted ’s post, making up ‘video game songs’ in their head as a child potentially indicates that video gaming sparked their chiptune fandom, much like the case of participant 43. The fact that chiptune became Redacted ’s preferred means to ludomusically actualise their desires to create ‘video game songs’ is also telling. There is a potential mattering association between their capital in VGM, the shaping of their desires for ‘homecoming,’ and the chosen ludomusical routes with which they choose to do so. As is also evident in the case of TOREINA’s chiptune fandom, there is an affect generated by the ludomusicality of chiptune’s limitations – captured subjectively as a ‘sincerity’ and ‘poignancy’– that resonates with Redacted as an ‘authentic’ means through which they can enact their self-expressions. Once more, with these aspects of chiptune capital now instilled and mapped, acknowledged even by simply saying ‘I like that’ as Redacted does, it continues to both constitute their desires for ‘homecoming’ as well as informing them how to enact it (cf. participant 47 in Chapter 3, p. 108).

Survey participant 12 presents another interesting case for the nomadic desire to overcome negative affects in the context of chiptune fan behaviour. Participant 12 once played in a band but their ludomusicality shifted dramatically due to a skateboarding accident, in which they broke their shoulder (age category 26-35, see appendix, p. 229). As a result of this accident, participant 12 became unable to play what we might consider to be more ‘conventional’ instruments and ludomusical routes as the guitar, keyboard, or even operate a computer. Participant 12 claims that they already had an interest in ‘composing with video game hardware,’ but it took the skateboarding accident to catalyse their encounters with chiptune as, due to their injuries, the Game Boy was all they could physically manage to play. Other avenues of ludomusicality closed off and restricted because of the broken shoulder, a negative affect on the vitality and affective potential of participant 12’s body, the Game Boy – as it did for TOREINA, among others – became a new and affirmative means of ‘homecoming.’

Interestingly, now something of a running theme among the case studies of this subsection, the ‘authentic’ aspects of chiptune limitations are cited once again as a desired quality. In response to the question ‘could you describe what you find appealing about chiptune? What do you enjoy about it?’ participant 12 writes the following in the latter half of their answer:

I find the constraints of chiptune to be inspiring... it requires learning, experimentation, curiosity. Nothing happens on accident... chiptune is deliberate and reinforces the notion that the primary instrument you use to make music is your BRAIN... the physical object you make sound with is just a tool in the brain’s toolbox. (See appendix, p. 229)

The hauntographical ethos of chiptune factors into this statement, as they cite chiptune as the deliberate reinforcement of limitations and, thereby, the deliberate foregrounding of – and inspiring ludomusical play within – the constraints of its own mediation (cf. Chapter 4, p. 137). There is also something of a poetic connection between participant 12’s damaged shoulder, chiptune’s limitations, and the way in which participant 12 got into chiptune as a new means to enact their ludomusical ‘homecomings.’ As they elaborate in my survey: ‘[chiptune’s] constraints are a challenge, and (*sic*) challenge inspires growth.’ Despite being physically unable to play the guitar, keyboard, or operate a computer at that time, participant 12 was still driven to enact their ludomusicality. In many ways, the ludomusical ‘growth’ encouraged by the brain food of chiptune’s constraints mirror that of participant 12’s own personal growth – ‘becoming’ ludomusical again, through chiptune, beyond the constraining challenge of their broken shoulder. While they state that they always had an interest in composing with video game hardware, this capital especially came to mattering fruition to un/consciously inform the routes participant 12 could take to enact these desires.

Participant 72’s chiptune fandom, first mentioned in Chapter 1, offers a more poignant case study for the use of chiptune to transform negative affects in view of ‘homecoming’ and identification. Participant 72 reveals that their chiptune fandom is largely driven by the sudden and untimely loss of their father. In their survey response, participant 72 cites how they first discovered chiptune through playing the video game *Mega Man* on their Gamecube console – a gift from their father (Capcom 1987). On reading their survey response, it appears that participant 72’s attachment to chiptune was greatly amplified by the affect of their father’s passing and, moreover, is spurred on by the residual traces of this profoundly traumatic event.

Chiptune became a way for participant 72 to cope with this loss, and a means to evoke the memories of their father in order to keep their ‘connection’ alive. This case study then sees another example of the way in which the ‘homecomings’ of chiptune fan identifications sees the subjective capture of a hauntological return, the potential generation of new connotations, and a ludomusically renewed intensity and vitality. All music has the power to evoke and sustain such profound connections between our loved ones. Yet participant 72 desires ludomusical interactions with chiptune in particular because, within their capital, the timbral qualities of chipsounds are (mattering) mapped to their relationship with their father.

As participant 72 writes: ‘every song tells a story.’ And indeed, reading the story of their chiptune fandom and its roots in loss is, in and of itself, strikingly moving. Chiptune is not going to make the traces of these negative affects dissolve entirely in listening or permanently in the long run. The important point here, however, is that for participant 72, ludomusical encounters with chiptune are a crucial means through which they can reinvent and revitalise themselves, and hauntologically mediate the memories of their father in the here-and-now of their need. The way in which participant 72 utilises chiptune to overcome an ongoing and negative affect on their vitality is what Braidotti would consider a nomadic practice of affirmation: driven by a desire to ‘become’ in an affirmative way, constituted and guided by self-knowledge, and actualised by way of affective encounters.

For participant 43, TOREINA, and indeed all chiptune fans alike, chiptune is the sound of ‘home,’ towards which the ludomusical traces of their prior encounters continue to draw them, and the constraints that mediate these sounds are also the ludomusical tools through which fans can tailor their ‘homecomings’ and identifications as desired (cf. Chapter 3, pp. 122-9). Like the self-knowledge of the nomadic subject, chiptune capital can affectively impel the fan to ludomusically inter/act as well as un/consciously inform *how* they act on their desires and in a way that, ideally, ludomusically evokes the mattering connections of ‘homecoming.’

In the longevity of chiptune fan identities and their ludomusical shaping, chiptune capital then forms the self-reflective and self-productive fuel that sets the desire of chiptune fans in motion (cf. Sandvoss 2005, p. 97; cf. Bailey 2005, p. 8). Chiptune capital is self-reflective because it mnemonically informs the personal familiarity and importance of chiptune fan identifications and belongings, particular tastes, and emotional attachments (cf. Chapter 3 on mattering maps, pp. 116-22). It is also self-productive because, as these mattering traces mnemonically resurge, they can shape the desire for the ‘home’ of ‘homecoming.’ To paraphrase Kelsey Henry, Iveta Jusová, and Joy Westerman’s reflections on Braidotti’s work, the ludomusical traces that form chiptune capital are the lynchpins in the nomadic attentiveness



to where fans have (ludomusically) ‘been’ and ‘who’ they now are as a result, as well as the catalysts for where they are going, ‘who’ they might want to be, and how their ludomusicality can get them there (cf. 2014, p. 152).

It is worth emphasising that fandom in itself is nomadic in its flows and ebbs (cf. Jenkins 2013, p. 223). As participant 43 states, for instance, chiptune was something they had encountered during their childhood, but it was not until much later that their ‘gravitation’ towards the genre took place. These ludomusical traces did not have an instantaneous affect on participant 43’s ludomusicality and desire; they laid ‘dormant’ until they erupted by chance into new fannish passions and attachments (cf. Williams 2015, p. 29; cf. Chapter 3, pp. 116-22).

In our daily lives, there are a multitude of chance encounters and affective forces that shape our sense of self and our vitality at any given time. The capture and traces of these encounters might enhance, suppress, or kill off desires for fandom altogether. My survey data largely points to the enhancement, with participant 12’s chance skateboarding accident and the sudden passing of participant 72’s father being prominent examples of this. As Chapter 4 concluded, the ‘home’ of chiptune is always ‘where the haunt is’ (p. 151). Yet, which form of ‘home’ is desired and where it can be located at the time – by way of ludomusical conjuration – continuously shifts. The desire to enact ludomusicality is a nomadic one, and the ludomusical routes to which chiptune fans are drawn can at times be cyclical, sporadic, and seasonal.

# Conclusion

## Chiptune: The Ludomusical Shaping of Identity

This thesis has explored two main research questions:

1. How are fan identities shaped through musical interactions with chiptune?
2. Through which musical process does this ‘shaping’ take place?

In order to answer them, I adopted a relational ontological approach to analyse the ways in which fans subjectively experience chiptune in relation to their identities, and how which these experiences, in turn, shape their identities in the process. This approach led to a three-part, interdisciplinary analytical model, which broke down chiptune fan experiences in musical play into their constituent non/human elements, identified the roles of each of these elements in the process, how they musically play together to shape fan experiences, and how these experiences, in turn, shape notions of identity.

Chapter 1 grounded the study through the argument that chiptune thrives in musicking – in *action* – and focused on the ways in which fans experience chiptune in relation to their identities (pp. 47-54). Rather than just describing the different kinds of qualities and motivations that chiptune evokes for its fans, with a focus on process and accounting for the factor of heterogeneity, Chapter 1 argued that chip-musicking instigates a change in participating fans. Chip-musicking can engender the ‘homecoming’ of chiptune fandom, which describes the ways that fans experience their musical interactions with chiptune in relation to aspects of their identity. The ‘homecoming’ of chiptune involves a sense of fannish familiarity and/or a communal bond – often described in terms of chiptune’s qualities and discourses listed at the beginning of the chapter – intertwined with an empowerment or liveliness that fans often capture such adjectives as ‘buzz,’ ‘vibes,’ and ‘feels’ (see pp. 54-65).

The ‘homecomings’ of chiptune fandom are temporary, and as such there is an element of ritual to the ways in which fans keep on chip-musicking to produce and maintain a sense of identity and communal belonging. At the end of the chapter, it was proposed that the ‘homecomings’ of chiptune fandom are the point which chiptune fan identities are shaped and maintained. Thus, to understand the ways in which this takes place, it was necessary to focus on the ‘homecoming’ process: what happens between fans and chiptune for their identifications to take place.

Chapter 1 then broke down and established the key elements that play into the ‘homecomings’ of chiptune fandom, and how we can approach their musical interactions. Through a musicological adaption of ANT, it was argued that we can understand the ‘homecomings’ of chiptune fandom emerge as a social-musical reality, shaped through an inter-objective relationship between chiptune’s primary non/human mediators (chip-musical technologies, fans, and chipsound timbre), and that each possesses their own form of agency integral to the process (pp. 65-70). Through the insights of ANT, it was proposed that understanding the agency of each primary mediator was necessary before exploring the ways in which they musically interact with one another.

Chapter 2 then explored chip-musical technologies as one of the primary non-human mediators of chiptune (pp. 71-88). In the same way that Chapter 1 accounted for the heterogeneity of chiptune fan experiences, Chapter 2 first addressed the methodological issue of chiptune’s many and varied musicking practices. To account for this, it was argued that the ‘home’ of chiptune fandom thrives in the hypermediacy of PSG audio constraints: their constrained compositional affordances and their gritty timbral qualities (pp. 71-7). This hypermediacy was argued to form the consistent distinctiveness of chiptune and, as the catalysts of chiptune actor-networks, chip-musical technologies afford the fan varying strategies through which they can remediate the constraints of PSG technologies (pp. 77-88).

Chapter 3 explored the agency that chiptune fans possess within chiptune actor-networks and argued that this agency is enabled by their knowledge of their chiptune fandom. It was argued that chiptune fan knowledge accumulates as a form of capital which, as an actant, guides the ways the possessor inter/acts with chiptune and mediates the ‘homecoming’ process (pp. 89-99). Developing this point, it was argued that the agency fuelled by chiptune capital can be understood as a form of chiptune literacy, which is comprised through three component building blocks: knowledge structures, personal locus, and competencies.

The key knowledge structures that constitute chiptune capital were identified as chipsound knowledge, contextual knowledge, musical knowledge, and self-knowledge. It was argued that the multitudinous different aspects retained within these knowledge structures are mapped in mattering relation to one another, as well as in relation to their significance and personal importance (pp. 104-122). It is because this knowledge matters that it becomes active again, informing sensibilities of fans in knowing which kinds of ‘homecoming’ they wish to enact, and how to exercise their musical competencies for the ‘homecoming’ to take place. These competencies – identified as the access and operation of chip-musical technologies, interpretation and fannish musical meaning making, and creativity, which extends to all forms

of chip-musicianship – are the channels through which chiptune fans mediate the ‘homecomings’ of their fandom (pp. 122-9).

Chapter 4 identified the agency of the third primary mediator, chipsound timbre, and explored how this agency mediates the ‘homecoming’ qualities of chiptune fandom. Where Chapter 2 argued that the ‘home’ of chiptune fandom lies in its remediated constraints, Chapter 4 argued that chipsound timbre mediates the haunting of these constraints in chip-musicking (pp. 129-44). Through their hauntological agency, chipsound timbres trigger the resurgence of chiptune’s mattering connotations, at times unpredictably, imaginatively, and with multiple aspects of fandom returning at once. Linking with Chapter 2’s focus on remediation, it was argued that chiptune is not only hauntological in its musical effect but also hauntographical in its practice. Through the mattering ways in which chiptune fans exercise their competencies, they can be understood as deliberately seeking to haunt themselves with the mattering aspects of their fandom.

The hauntology and hauntography of chiptune then led me to investigate the relationship between chiptune fandom and nostalgia, which served as an apt case study to illustrate the ways in which this agency mediates the ‘homecomings’ of chiptune fandom (pp. 144-51). It was argued that the hauntological agency of chipsound timbres mediate listeners’ perceptions of memory and temporality. As it does so, it can reawaken aspects from the past and evoke their ghostly presence in the here-and-now as though they had never left. It is in this mediation of memory and the chronology of time that chiptune’s nostalgic responses gain their potency, generating a sense of up/rootedness of the familiar in the new and potentially the imaginative play of musical rêverie. Consequently, through their hauntological mediation of memory and time, chipsounds can also mediate experiences of nostalgia in younger audiences, who experience the rêverie of times they never experienced as a form of ‘homecoming.’ While nostalgia was used as the main case study, the hauntological agency of chipsound is essential to all forms of chiptune’s ‘homecoming’ experiences, as it shapes the resurgence of chiptune’s mattering connotations, and even beyond. Chiptune ‘authenticity,’ for example, was also cited as another instance in which the hauntology of chiptune’s constraints emerge through the ‘raw’ and ‘pure’ qualities of chipsound timbre (pp. 148-50).

With the roles of all primary mediators identified and illustrated, Chapter 5 then explored their interactions as chip-musicking takes place, and the ways in which these interactions shape the ‘homecomings’ of chiptune fandom. To do so, it first adopted the lens of affect theory to help navigate and understand the complexities of non/human interactions, and the ways in which human subjectivity emerges *through* these interactions (pp. 152-62). To

adapt affect theory concepts for the context of chiptune, Chapter 5 introduced the concept of ludomusicality. Ludomusicality describes the ways in which music becomes playful and play becomes musical, and thereby helped to contextualise the interactions that take place between the primary mediators of chiptune actor-networks (pp. 162-3).

Through the combination of affect theory with ludomusicality, four new analytical concepts emerged: ludomusical potential, ludomusical encounters, ludomusical events, and the subjective capture of ludomusical vitality. Ludomusical potential emphasises that while we may understand what each of chiptune's primary mediators do, their agency should always be approached in terms of an unpredictable potential to affect and to be affected (162-8). This notion helped to elaborate on the mediatory agencies of chip-musical technologies, arguing that they do not just mediate the constraints of chiptune, but by doing so become ludomusical fields of playful potential through their affordances. Ludomusical encounters then described the ways in which chiptune's primary mediators interact with one another as chiptune plays. As these encounters are affective, they generate ludomusical events – which can range from the emergence briefest of chipsound blips and shifts in frequency filtration, to larger events of telephone chords and white noise rhythms (pp. 168-76).

As the case study of cTrix's performance helped to demonstrate, through the affectivity of ludomusical encounters, chiptune actor-networks can be understood to form as assemblages. Chiptune assemblages have their own emergent vitality and efficacy, co-shaped by the ludomusical encounters and events that take place in their groupings. The 'homecomings' of chiptune fandom take place as the co-generated ludomusical vitality of the chiptune assemblage un/consciously converges on, and is captured within, the bodies of musicking fans. This capture is not only where the hauntological aspects of chiptune 'homecoming' can take place, but this capture can also reinvigorate the vitality of the fan, motivating them to dance, to tap their feet, to feel the almost ungraspable qualities of chiptune's 'vibes,' and to lose themselves in performance as the chiptune surges through their bodies. As chiptune, like all music, can be considered a succession of ludomusical encounters and events in its performance, it was argued that the vitality of its assemblages is in constant modulation. Fans 'become with' the ludomusical encounters and events that take place within chiptune assemblages. Consequently, the 'homecomings' of chiptune fandom form at the unstable and modulating apex of immanence and composition.

Temporary and unstable though the 'homecomings' of chiptune fandom are, it was argued that their ludomusical processes can leave traces in the bodies of fans, where they accumulate into capital. These traces also vary in different scales, from memories of the initial

life-changing moments that chipsound's blips and bleeps entered the lives of fans, to newly developed memories of specific chiptune performances, to how chiptune is tied to the nostalgia of childhood, to ideals of 'authenticity,' and to a sense of 'me.' While fans approach chiptune from the position of knowing that they *are* a fan, considering the affective process of ludomusicality I argue that changes also occur to this 'knowing' through alterations chiptune capital. It was thereby contended that chiptune fan identity not only persists through, but is enmeshed within and potentially changed by, the ludomusicality that informs its vitality (pp. 176-80).

Where Chapter 5 answered the second main research question of this study – identifying ludomusicality as the affective process through which experiences of 'homecoming' are shaped – Chapter 6 then explored the relationship between ludomusicality, 'homecoming,' and chiptune fan identity. With help from Braidotti's approach to identity and affect, it was argued that chiptune fan identity forms through the accumulation of ludomusical traces in the bodies of fans – residues of the ways in which they have experienced chiptune in the past (pp. 180-4). Building on Chapter 5's findings, it was argued that these ludomusical traces, forming into chiptune capital, are charged with new potential, and that they alter the ludomusical potential of chiptune fans in their future musicking practices and 'homecoming' experiences.

Identity is stressed to be one of 'becoming' and not 'being' in Braidotti's work, and as such any semblance of its stability or cohesiveness relies on continual affective encounters with other non/humans. The same is true of chiptune fan identity: it relies on ludomusical encounters for its 'homecomings' to take place – its 'being' emerges *through* its ludomusical becoming. Maintaining a coherent sense of chiptune fan identity thus relies on continual, ludomusically engendered 'becoming.' Yet, given the unpredictable nature of ludomusicality and its affectivity, chiptune fan identity 'becomes with' its ludomusical encounters, and thereby remains subject to flux, unpredictable shifts and non-linear evolutions.

Chapter 6 then used Braidotti's concept of the nomadic subject to account for the ongoing relationship between ludomusicality and chiptune fan identity (pp. 189-99). Illustrated through the chiptune subgenre of 8-bit reggae, it was argued that the ludomusical shaping of chiptune fan identity is one of nomadic trans/formation. The process of trans/formation described the 'homecoming' of chiptune fandom as an affective revitalisation of the mattering traces that constitute a fan's identity, while also accounting for the fact that the 'self' is in process. The trans/formative shaping of chiptune fan identity can also give way to new mattering connotations, new playful avenues to explore fandom, new forms of creativity, and

new traces in the capital of fans. Through Braidotti's insights, it was also contended that chiptune fan identity – 'who' the fan is at any given time – is also shaped in relation to the makeup of the ludomusical assemblages in which the fan participates. Different strategies of PSG remediation, differences in the mattering maps of chiptune capital, and the different ludomusical avenues through which chip-musicking takes place will all produce different 'homecomings,' but all can be said to engender the trans/formative shaping of identity.

The final part of Chapter 6 looked to the longevity of chiptune fan identity through Braidotti's ideas around self-knowledge and desire (pp. 199-210). Building on the insights of Chapter 3, it was argued that as mattering aspects of chiptune capital become active again, and feed into the personal locus of the fan, they constitute an un/conscious desire for 'homecoming' (see pp. 116-22). Chiptune fans are not just aware of where the 'homes' of their fandom are, but they are affectively and un/consciously driven towards the ludomusical encounters with the non/human mediators that engender their vitality. This desire for 'homecoming' can also involve the desire to transform negative affective traces by way of ludomusical encounters. The ways in which mattering traces become active again are unpredictable, changing in significance second-by-second or over the course of extended periods of time. Consequently, the longevity of chiptune fan identity is also nomadic in both the frequency with which fans play with their beloved PSG constraints, bleeps and bloops, as well as the ludomusical routes that they might take together.

### **Thesis Reflections and Perspectives for Future Research**

While the specific focus of this thesis has been the relationship between fan identities and chiptune, this thesis is able to provide new insights into the relationship between music and fandom more generally, and the ways in which the affective factor of play is integral to this relationship (see pp. 19-20). I set out to address the points raised by some fan studies scholars about the current field of music fan research: specifically, Stein's emphasis that music fan studies must turn their attention to the ways in which fandom is shaped by the 'stimulating limits of context and interface;' Getman and Hayashi's argument that music fan research should prioritise the *act* of musical interaction and not music as an 'aural object;' and Morris's point that, despite the ongoing proliferation of music fan studies, still so little is understood about the ways in which music and sound 'spark and maintain' fan relationships (Stein 2009, p. 183; Getman and Hayashi 2016, pp. 135-39; Morris 2018, p. 357; cf. Hills 2014, p. 17; see Introduction, pp. 25-9). Chiptune presented a perfect case study for shedding

light on these questions, as it thrives so readily in the self-imposed technological and musical constraints that are so integral to its fannish identification.

Also addressing Hills' critique that all too often music fan studies tend to focus on a singular aspect of fandom – such as a particular artist or collectable object – this study accounts for the heterogeneity of chiptune fandom while also locating the consistently distinctive factors that allow for its coherent analysis (2014, pp. 17, 32). As chiptune fandom does not centre around singular bands or artists but rather around consistently distinctive forms of re/mediated constraint, this study highlighted the importance of considering non-human agencies in the musical formation of fan identities.

I also aimed to develop the understanding of the relationship between fan identity and affect beyond its use as a synonym for emotion. Braidotti's theory of nomadic subjectivity is able to address both the non/human and affective relationships that shape fan identities, as well as to address the complex and multifaceted simultaneity of fan identity and fan experiences. Feminist approaches and critiques of fan studies have been identified before as important to understanding fan identities and relationships, and I think Braidotti's concept of nomadic subjectivity yields great potential for future research (see Scott 2018, pp. 72-6).

The interdisciplinary analytical framework of this study also addresses the necessary 'cross-talk' that Duffett calls for in music fan studies, primarily to understand the relationship between fan identity and something that is much less visible and tangible than other forms of media fandom (cf. 2014, pp. 1-7). While the insights of this study are geared towards chiptune, my approach to this musical fandom – locating the key non/human mediators of fan experiences, the ways in which their agency shapes these experiences, how they play with one another to shape a sense of fan identity which is one of ongoing, nomadic trans/formation through media consumption – can potentially be adapted for any form of media fan research.

This said, the analytical framework and model developed in this thesis has its limitations. As I acknowledged in my introductory chapter, the vast network of audiences and practices that constitute contemporary chiptune present an analytical and methodological hurdle. My identification of chiptune's primary non/human mediators was an attempt to address this, and particularly in a way that accounted for the heterogeneity of their forms and practices. As a consequence of homing in on the musical interactions between technology, fans, and timbre, however, I feel there could be further room for more musicological analyses. Given its focus on musical play, Chapter 5 in particular could have further considered other forms of musical mediators, such as harmony, rhythm, and melody. They are considered in part, but only in description of how chiptune actor-networks shift, and how chiptune's



‘homecomings’ are ‘contoured’ by such factors. Likewise, I think Chapter 6’s focus on 8-bit reggae has great potential for expansion here. While chip-musical technologies and chipsound timbres are primary – the anchors that tie musical experiences to chiptune fandom – there is a gap in knowledge here regarding how the musical factors as harmony, rhythm, and melody shape chiptune’s ‘homecomings.’

Chapter 5 also used a case study of chiptune in live performance. Such a context best illustrated the lenses of affect theory and ludomusicology presented in that chapter. Yet, through its focus on chiptune’s primary mediators, my model does not account for the relations between human audience members in this context. This is an important consideration, because although my survey data highlighted the importance of the sense of community that chiptune brings together, the ludomusical relationality between chiptune fans – between *human* actors – in performance is unaccounted for in this thesis.

In addition, while a live setting was an apt study with which to trace chiptune in musical performance and apply my theory – where we can actually see the chip-musical technologies being manipulated, the reaction of the audience in relation to the beats and bleeps they capture, and the gestural energy of the performer, cTrix, wielding the hardware that gels together the ludomusical assemblage – how would my model of ludomusical play, its potential, encounters, events, and traces directly apply to other, perhaps more casual instances of chip-musicking? As I established, ludomusical play, its encounters and its events, account for *any* kind of un/conscious action through which music is played and played with. These processes are not unique to any specific form of chip-musicking; it is only the actors present within the circumstances that enact these processes in different ways, and thereby produce varying different ‘homecoming’ trans/formations.

Thus, I feel there is room here for other case studies that contrast with live chiptune to make this point clear – perhaps those in which chiptune fans listen on their morning commutes, during their cigarette breaks at work, during video game live streams, or perhaps just as they cycle through different chip-synth presets in their DAWs trying to find the *right* kind of PSG timbre they desire. These instances are all still ‘live’ in the sense of ludomusical encounters, events, and the intensities of becoming with, but there are other factors at work in the shaping of their ‘homecomings’ that differ from the context of such events as Blip Fest (see Auslander 1999, pp. 23-38; Sanden 2013, pp. 1-18, 18-44).

As the completion of this thesis neared, I had some encounters with chiptune fans that made me consider other potential limitations of my analytical model. One chip-musician recently approached me about my 2018 article *Chiptune: The Ludomusical Shaping of*

*Identity* with a few concerns (link in appendix, p. 227). Published from a conference paper I gave at the 2018 Ludomusicology conference in Leipzig, Germany, the article presents a snapshot of my overall thesis and presented what was then the current developmental stage of my analytical framework. In the article, I use Braidotti's nomadic subject and ANT to explore the relationship between the multitudinous mattering connotations evoked by intertextual chiptune creativity – an 8-bit rendition of David Bowie's *Starman*, in this instance – and chiptune fan identity. It was not the feminist or actor-network angle they disagreed with, however, it was my use of fan studies.

This individual expressed to me that they were 'more than just a fan' of chiptune, taking issue with the term because it did not seem to capture how chiptune had become a means for them to express themselves and their politics. They revealed to me that, for them, the term 'fan' was too light and not serious enough, in addition to being bound up in its negative connotations. Specific instances of such connotations, however, were not discussed further. While I do state in this study that 'chiptune fan identity' captures all ways in which chiptune can become affirmatively interwoven with a sense of self, fondness, and belonging – in *any* capacity and intensity – I do feel I could justify further my use of the term 'fan' here (see p. 20). In particular, I could elaborate on the ways in which fandom also has strong feminist and political aspects in its makeup.

They also raised an issue with my use of the term 'home' to describe the relationship between chiptune and fan identity. At the time of the article's publication, the concept of 'homecoming' as it appears in this thesis was not fully developed; it was just a sense of 'home' – as *Heimat* – as adapted directly from the work of Sandvoss (2005, p. 64). In response the chip-musician asked me: 'what about those who come from broken homes? What about those of us who [use chiptune to] work through serious stuff we've been through?' While I clearly state in both my article and my thesis that this notion of 'home' is not so literal, nor anchored to a particular place and time, I think establishing these terms further with a greater variety of more in-depth case studies would have clarified things further.

This encounter caused me to reflect further on my own subjectivity as an aca-fan, and the use of 'homecoming' within my thesis. In attempting to account for the heterogeneity of chiptune's audience demographics, perhaps my use of 'homecoming' is too generalised – always geared towards the affirmative – and certain kinds of fan voices are written out as a result. What about such aspects as 'anti-fandom,' or more on the negative and difficult aspects of chiptune fan identity, which are touched upon in the case of survey participant 72's

bereavement? This encounter also made me consider the ways in which the individual that approached me might alter my model if they were to use it. They revealed to me they were keen on the feminist angle in my approach, so therefore I considered how my model might work as an auto-ethnographic methodological tool for an individual subject rather than a means to grasp the ludomusical processes at the heart of an entire fandom. For instance, instead of theorising ‘homecoming,’ the subject would start by detailing their own experiences with chiptune – a kind of self-narration from which to begin the auto-ethnographic tracing.

The subject could then begin to break down and trace the relational ontology of their identity through their own ludomusicological case studies and self-accounts. Chiptune capital might remain although, without the fan studies angle, perhaps it would be reframed just as self-knowledge – as Braidotti does in her work – which would detail the kinds of non/human encounters that produced its episteme. The user would then place themselves in the position of the nomadic subject, and trace their own becomings and tensions, and ludomusical trans/formations, that have shaped ‘who’ they are today, how this shaping continues to occur, and why they desire to shape themselves through chiptune’s ludomusical means.

Connected to this reflection, there are also limitations regarding my empirical data. While I set out to achieve inclusivity and heterogeneity, I do feel that despite collecting a large array of fan voices, their usage was a little ‘thin.’ There are instances, particularly in Chapter 1, where multiple fan voices are cited one after the other regarding a particular topic. Although the variety of voices helps quantitatively support a theoretical claim, I think many analyses could benefit from more in-depth uses of fan words. Here, I think it was a mistake to not conduct my own interviews with chiptune fans, and this is a point I would rectify if I were to conduct the study again – it is certainly something I am planning for future research. In addition, I would also alter the survey design so that follow-up interviews would be encouraged, and that I could get in touch with fans should they consent to do so via a tick box.<sup>154</sup> Finally, my empirical data is also far too online based. I feel conducting field work in person – as Polymeropoulou does – would also provide greater depth to my research (2014).

I also feel that there is too little of my own auto-ethnographic reflections on chiptune and my identity in the thesis. While I acknowledge that my own auto-ethnography formed the

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<sup>154</sup> The inclusion of interviews would also help with the representation of non-cis male, white, and LGBTQIA+ chiptune fan voices. While their voices are present in this thesis, perhaps more in-depth interviews about the relationship between chiptune and their identities would make this representation more visible.

analytical and theoretical grounds of this study, I am mostly written out of this work – perhaps for the concern that the inclusion of my own voice would negatively impact the validity of my research and my academic judgement. In retrospect, however, I now feel that its inclusion will have the opposite effect – perhaps even help other chiptune fans to relate to the theoretical side of my study (cf. Hills 2002, pp. 82-9; Hellekson and Busse 2006, pp. 24-5).

Another potential limitation of my work that arose during my reflections were neurodivergent case studies. The *Chiptunes 4 Autism* community came to mind here. *Chiptunes 4 Autism* was founded in 2016 by a chiptune fan and his son – both of whom are autistic – and is a community of chiptune fans and composers who, predominantly, are on the spectrum in varying degrees.<sup>155</sup> Their objective is to empower and promote neurodivergence, and the proceeds made from their album sales go to charities who focus on such causes. The insights of my study predominantly came from tracing the auto-ethnographies of neurotypical fans – by no means intentionally, I should add – so how would my model apply to neurodivergent case studies, particularly in cases where memory may operate in a different way to how I neurotypically theorise it? Perhaps chiptune capital and literacy would then be unable to apply to certain fan demographics; perhaps these lenses may even prove to be exclusionary in these instances.

One research aim of this thesis was to create insights that apply beyond its subject matter, such as shedding light on the broader questions surrounding music and identity, and media fandom in general. However, there are also potential limitations and theoretical alterations to consider if the analytical framework of this thesis were to be used as a general model for other forms of (music) fandom.

Synthwave, for instance, is analogous to chiptune in many ways: its fans remediate obsolete music technologies – predominantly synthesizers and drum machines – from the 1970s through to the 1990s, it has a strong presence of nostalgia running through its musical experiences and fan discourses, and there is a strong presence of fan capital in the ownership and know-how of vintage music technologies, ‘authenticity,’ and the ways in which these values cause fans to become ludomusical. Yet, while ANT can also apply to synthwave’s non/human and ludomusical relations, could the method of locating its primary mediators apply with the same acuteness as chiptune? Chiptune’s consistent distinctiveness is arguably more immediately graspable than that of synthwave, which has a potentially greater number of primary mediators than technologies, fans, and timbre alone.

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<sup>155</sup> <https://chiptunes4autism.bandcamp.com/music>

There are not only synthesizers and drum machines – of analogue, digital, and virtual varieties – but also recording and production techniques to consider, such as gated snare reverbs and over-compressed chains between the kick drum and the bass line. The room for musicological insight also comes up again here, as synthwave is also characterised by such qualities as arpeggiated or ‘bouncy’ octave bass lines, diatonic chord progressions and extended harmonies. Many synthwave artists also pair their music with video: often obscure movies from the late 20<sup>th</sup> century, or artistic imagery evocative of Patrick Nagel’s art. As it currently stands, my analytical model would have to be tweaked to accommodate these considerations. My concept of ludomusical potential, encounters, events, and traces may apply here in relation to the music, but it would be necessary to also incorporate lenses that deal with visual media encounters into the mix.

There are also kinds of fandoms that do not lend themselves well to the kinds of analysis I propose in this study. Fan fiction, for instance: can its fan experiences be broken down into their primary mediators in order to analyse what they do, how they play together to shape fan experiences, and how these experiences, in turn, shape notions of identity? The three aspects of my analytical framework that could certainly apply here are nomadic subjectivity, hauntology, and fan capital. Nomadic subjectivity could definitely be used as an analytical lens in this context, as fan fiction has a long tradition of being a means to enact forms of affirmation in feminist contexts (cf. Hellekson and Busse 2006, pp. 17-25; see also Derecho 2006). My uses of hauntology and fan capital could also apply here, as genre conventions, pre-existing characters, narratives, canon, and so on form the ‘blueprints’ for the ways in which fans act in their re/writing, through which they conjure a hauntological resurgence that may engender a repetition that is also transformative (cf. Coppa 2006, pp. 236-7).

This said, it would not be possible to define consistent distinctiveness so clearly for fan fiction, aside from the obvious factor being that it is composed of written text. Certain practices and processes may be shared among fan fiction writers in their creativity and how they receive the works of others, and these practices and processes may be understood as nomadically trans/formative. But how can notions of primary mediators and actors be defined in relation to fan fiction? Arguably, the ‘blueprints’ from which fans draw in their works could be considered as actants that interact with their own capital, which then produce a desire for the creative rewriting, alterations of canon, and romantic aspects that so often appear in fan texts. But even so, it would be difficult to identify key forms of mediatory actant – and the kinds of agency they possess – within such a diverse array of practices.

The format of fan fiction also raises issues regarding my approach to play and performance. Notions of play and playfulness can absolutely apply to the creativity of fan fiction (cf. Hellekson and Busse 2006, pp. 30-1). With the scope of my thesis in mind, however, where and how, exactly, does play and performance take place in relation to fan fiction? Some have argued it is in both the writing and its reading (cf. Coppa 2006, pp. 235-40). The concepts of affective potential, encounters, events, and traces may still apply here, but would need to be recontextualised for a different kind of performativity and subjectivity to that of ludomusicality.

Football fandom also formed an interesting thought experiment within my reflections: could my analytical model apply here, too? The grounding concept of ‘homecoming’ could absolutely apply, and even in a ludomusical context if we consider the theme of ‘home’ in the 1996 anthem *Three Lions*. ‘Home’ has also been applied to fannish experiences of visiting sports stadia (cf. Sandvoss 2005, p. 65). Yet, once again, locating primary mediators of football fandom may be analytically and methodologically challenging.

The lenses through which I understand chiptune’s primary mediators, however, can apply to football fandom. Remediation can be understood to underpin fan performativity – not so much in the media context of how fans access and view football, but in how the iconography of flags and team colours are remediated through clothing, makeup, and football related paraphernalia. These materials, face paints, sequins, and so on, are non-human mediators in the performance of football fan identity. Fan capital can also apply to football fandom as much as it can to any form of fan behaviour, guiding the kinds of clothing they adopt, the ways in which team symbols are painted onto their skin, the dying of their hair, and even guiding their reactions to the game as it unfolds. Hauntology could also be understood to form an integral part of football, as can be observed in fannish discussions of legendary players and previous games, and the ways in which team colours haunt fans with a certain ‘homeliness’ as they watch their favourite teams play away. In the case of watching football as a fan – either live in a stadium, via television or by Internet streaming – fans can also be understood as *becoming with* the game. These reactions are also trans/formative and bodily, they are felt as affective encounters, as fan knowledge on the rules of the game and their personal stakes in its victory form a tension with the unpredictability of play as it unfolds.

My approach to identity, however, would cause issues here – both in relation to fan representation and fan reaction. Football fan identities, like any form of identity, can be understood as nomadic in the Braidottian sense: reliant on affective non/human encounters, in flux, and enmeshed in the tension between rootedness and transition. Yet, where Braidotti’s

nomadic subject focuses on positive relationality between the self and non/human other with a view to affirmation, how would certain aspects of football fandom and fan behaviour – and toxically masculine aspects in particular – sit within such a feminist framework? How can we approach the nomadic affirmation of fan identity when racism, homophobia and transphobia, vandalism, tribalism, and nationalism can form prominent components of some football fan behaviour? Where do we stand analytically when the affirmation of the self for one fan emerges through the negative treatment of the other?

Conversely, some football fans might not react well to having their identities understood through a feminist framework: unstable and performative, and reliant on non/human others and their affects. Amir Ben Porat – an aca-fan who writes on football fandom – has testified to the stability of football fan identity in comparison to how identity is portrayed in post-structural and postmodern theory (2010, pp. 277-90). For fans, he argues, football is a way of life, beginning in childhood and lasting until their passing, which revolves around their scheduled relationship with their chosen clubs (*Ibid.*). It is evident that football fandom is a means of ontological security. And while Porat's approach omits the processes through which identity actually *happens* – and therefore the inevitable matters of non/human affects, 'becomings,' and the performative nature of identity – such a portrayal, both empirical and theoretical, certainly aligns with how football fans might view themselves, their roots and 'homes,' and the 'authenticities' of their being. Approaching the sacrality of football fan identity through the work of Braidotti or any other feminist approach – which undermine the supposed stability of all such notions – would potentially create unwanted tension between the fans' understandings of their identities, and the academic capital, authority, and imagined subjectivity of the researcher.

Within the scope of this study on chiptune, however, the focus has mainly been on the relationship between fan and music. All music fandom starts with the *music*, in something that fans *do* and play with. Fans may play music to enact and empower a sense of self and belonging, but the music, in turn, plays them – animates their memories, imaginations, and vitality (cf. Moseley 2016, pp. 17, 110). Just as music fandom is not, as Hills states, 'a destination [...] where the fan has to end up [...],' we can understand that music fandom has to keep 'becoming' (cf. Hills 2014, pp. 19-20). Ludomusical play catalyses the knowledge that fans have about their identity into an event. It is through these forms of non/human encounters that fans can haunt themselves with their mattering sentimentalities and 'authenticities,' connect with their communities, revitalise and empower themselves, while

remaining open to new playful avenues through which the ‘self’ can flourish and evolve, nomadically embodying a sense of identity while also remaining in transition.

In future research, I intend to develop further the ideas presented in this thesis both in the context of chiptune fandom and beyond. Most importantly, I would like to further explore the nomadic relationship between music fan identities and the ludomusicality that shapes them. There are many other aspects within Braidotti’s work that I would like to incorporate into this future research – such as ‘nomadic memory,’ ‘nomadic thought,’ and ‘nomadic cartography’ – to enhance my framework. I would also like to further investigate the ways in which different forms of chiptune fan activity can generate and conflate different forms of mattering experiences. As a part of my research, for instance, I encountered some examples of chiptune remixes – such as 8-bit remixes of Taylor Swift or Seal – in which fans claimed that they hated the original song but, through their PSG rewritings, they admit they find the piece more enjoyable through the inclusion of chiptune’s mattering constraints (cf. survey participant 37, age category 26-35, in appendix, p. 229).

I am also interested in continuing my research into the relationship between chiptune fandom and nostalgia – particularly the ways in which nostalgia becomes a driving resource for ludomusical play in chiptune as well as other musical genres and fannish attachments. With such subgenres as synthwave, retrowave, and vaporwave now more popular than ever before, I am interested in the ways in which the age of remediation has altered our relationship with nostalgia. Through music technologies that enable us to remediate the aesthetics of the past, memory, chronology, and culture become malleable, *playable*, and rich in ludomusical potential. Rather than approach the proliferation of retro-centric genres and fannish practices of remediation as stagnant and stuck in a ‘cultural loop,’ I would argue it is much more fruitful to consider the ways in which the nostalgia they engender is ludomusically playful as well as an integral component in the formation of fan identities.

Related to the subject of nostalgia, future research could explore the ways in which contemporary music VSTs remediate visual aspects of obsolete music technologies as well as their sonic idiosyncrasies. As mentioned in Chapter 2, VST synthesizers often go to the lengths of virtually rendering the woodgrain of their casings, the scratches and scuff marks that originated from wear and tear that never took place, and the glowing green text of their hard to read LCD interfaces. How do these factors also generate a sense of ‘authenticity’ in their users? How, moreover, do these visual factors also affect the ludomusical play that unfurls through their usage?



To conclude, the ludomusical shaping of chiptune fan identity, as one of ongoing trans/formation, is then playfully paradoxical. Chiptune is a musical genre and fandom primarily dedicated to – and ludomusically playful with – the antiquated micro-musical technologies and timbral anachronisms from the tail end of the previous century. Yet, through its ongoing nomadic and ludomusical encounters with bytes, blips and bleeps, intertextual fusions, nostalgic up/rootedness, and the renewed vitality that emerges through these encounters, chiptune fan identity resists its own obsolescence.

# Appendix

My 2018 article *Chiptune: The Ludomusical Shaping of Identity*, which developed from a conference paper I gave at the Seventh Ludomusicology Conference in Leipzig, Germany. Available here: <https://link.springer.com/article/10.1007/s40869-018-0070-y>

A screenshot of a now deleted chiptune fan comment. Taken by Reid, G. in 2016



## Opening and closing statements from survey

### Opening:

My name is George Reid, and I am a Ph.D. candidate in musicology at Kingston University, London. My research explores the ways in which chiptune shapes to the identities of its fans, and as a chiptune fan and composer myself I would love to hear about your experiences with chiptune! This survey consists of questions about the participant's personal experiences with chiptune, as well as their own tastes, and the data collected could potentially be quoted in the finished thesis. By taking part in this survey, you give consent to be quoted in the thesis as a case study.

Your name and participant number, age, gender identity and sexual orientation, and your opinions and experiences of chiptune are the only kinds of data that will be collected and stored from this survey. This data will not be released outside of my research, nor will the collected data be publicly accessible. I will have sole access to the data via my *LimeSurvey* account, which protects it via encryption and a two-tier password generation system required for every instance of access.

While there is space in the survey to include your nick/name or artist/online handle if you should so wish, all respondents will remain anonymous when quoted – participant numbers will be the only reference when identifying a particular case study in the thesis. For example: ‘Participant 24, 40 years old, takes part in chiptune for the nostalgia.’

*All* questions, however, are optional. Please feel free to skip any questions that you do not feel comfortable enough to answer. You are also free to withdraw from the survey at any time if you so wish. If at any time you wish to withdraw your survey data from the study post-participation, please feel free to contact myself or my academic supervisor. Upon your request, your survey data will be erased from the database, and you will not be used as a case study in my thesis.

### **Closing:**

This survey set out to gather a broad set of data detailing personal experiences with chiptune, aiming to capture a broad consensus of fan voices and legitimately represent our multifaceted community. Thank you for your time and participation. Please contact myself, or my academic supervisor, via the following details if you have any concerns or questions about this research:

Researcher: George Reid K1455076@kingston.ac.uk

Supervisor: Isabella van Elferen I.Vanelferen@kingston.ac.uk

Address: Faculty of Arts and Social Sciences Kingston University  
Penrhyn Road Kingston Upon Thames Surrey KT1 2EE

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