Why console-games are bigger than rock 'n' roll

What the music sector needs to know and how it can get a piece of the action

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Contents

Foreword

> *'Things change. The way people access their music has changed. The way people buy their music has changed. Above all else, Guitar Hero changed the way people saw music games permanently'*[1]

In the 20 years that I've worked in music, I've earned a living as a musician, record producer, educator, event producer and consultant. Until earlier this year, I'd never played on a games console. To me, they were all about racing, shooting and puzzle solving. Simply, they weren't about music, so they weren't for me. This changed on a visit to Barcelona earlier this year.

In the FNAC store in Plaça de Catalunya, as I passed through the disconcertingly quiet remains of the CD section, I came across a group of around 20 to 25 boys (I suppose their average age was 15 or 16) standing around a screen transfixed and nodding in unison. When I went to see what CD or DVD was holding their attention, I saw that two at the front of the group were playing small plastic guitars, equipped with a flipper where your right hand would strum and five coloured buttons where your left had would sit on the fretboard. It wasn't a CD or DVD holding the crowd's attention; it was a console game. The two boys were replacing the lead and rhythm guitar track to Guns 'n' Roses' *Sweet Child O Mine* guided by an onscreen moving fretboard (similar to consoles' Dance Mat games). I checked to see if this was a one off. It wasn't. There was a similar crowd every day that I went back to FNAC. This was my introduction to GuitarHero and the world of music-based console games.

The contrast with the semi-derelict CD section in the shop and the enthralled crowd around the console game could not have been greater. As someone who has lived my life in music, I felt like I was watching the future. And I wanted to find out more.

If the wider music sector is to be part of this future, and make the most of it, the whole sector needs to know how it works, what's at stake and how it can get involved. This includes education – therefore, this report aims to introduce the world of music-based console games to music educators and music education policy makers. It also aims to introduce some of the educational possibilities of music-based console games to games developers and owners of intellectual property (such as music publishers and record companies).

This is a crucial moment in the development of music-based console games. Music-games have never been more popular, and exciting innovations in technology mean that they have the potential of playing an increasingly important part in the musical landscape that surrounds young people.

This report has sought out young people's views about music-games, and aims to provide an insight into how music-games may develop and how the music sector could make the most of this exciting, nascent culture.

Some of the questions that this report aims to explore are:

- Are young people being attracted to making music via these games?
- Do music-games add value to or replace other ways that young people make and listening to music?
- Are young people making music, or learning about music, on consoles instead of on "traditional"[2] instruments?
- Are people starting on games consoles, then going on to other more "traditional" music making methods?
- What can games developers and console and peripheral manufacturers do improve music-games?

I hope you find this report useful and enjoy reading it as much as I've enjoyed making it. I gratefully acknowledge the help and support of everyone who's taken time to help me. As well as all of the contributors, I'd like to thank: John Kieffer, Ian Kirk and Robert Hewison; Remi Harris at AIM; Trevor Mason, Michelle James and Dulcie Ireland at Youth Music; Pamela McCormick at Urban Development; and, Duncan Bird, Director of Another Anomaly NYC, former Vice President of Sony BMG UK, who helped instigate this report.

If you have any questions, observations or comments, I'd love to hear from you. The best way to get me is to send an email to andrew.missingham@gmail.com.

Andrew Missingham
October 2007

Why console-games are bigger than rock 'n' roll

A short introduction to console games

Gaming is very, very popular with young people. In a 2005 report by the BBC, 100% of children surveyed between the ages of 6 and 10 called themselves "gamers"[3]. Every single one. 74% of young people between the ages of 6 and 16 played console games several times a week or more. In the same report, young people in this age range also rated gaming as their favourite pastime.[4] If past trends have continued in the two years since this report was written, it is likely that the figure of 74% will have increased, and that the age range of "100% gamers" will have broadened.

Given its popularity, it is unsurprising that the console games sector is big business. The UK is the third largest market in the world for games software sales (behind only the US and Japan), with sales of console, PC, handheld games software, console hardware and peripherals worth £2.18 billion in 2006[5].

The three big players in the supply of console game hardware are Sony, Nintendo and Microsoft (see Table 1). And although the current market leader for hardware sales is the Nintendo Wii, with its innovative motion-sensitive "nunchuk" controller, by far the greatest number of games available are made to be compatible with Sony's PlayStation 2, which was first released in 2000 and has sold over 100 million units to date).[6]

Table 1.

The three main console manufacturers and their current home and portable consoles

Manufacturer	**Home Console**	**Portable console**
Sony	PlayStation (PS) 3	PlayStation Portable (PSP)
Nintendo	Wii	Nintendo DS Advance
Microsoft	Xbox 360	

Why consoles and not computers?

Gaming on computers, is a massive part of the games market. For instance, subscriptions to online games made up nearly a quarter of the total volume of games sales in the US in 2005, with the online role-play game *World of Warcraft* making around 85% of these downloads[7]. However, this report is focussed on games consoles for a three principal reasons. Firstly, computers are generally regarded as "work" machines whereas console games are seen as "play" (a finding backed up by young people who took part in this study). Studying activity on consoles gives us an ability to explore what has been dubbed "the play ethic"[8], that is believed to be a building block for broader creativity. Secondly, games

consoles and their games are designed, principally for young people. Their interfaces and control panels are intentionally simple and their games are generally structured in such a way as to allow easy entry and gradual progression through games, with (in the case of the best games) fiendishly difficult higher levels. Lastly, new music-games are being primarily designed for games consoles.

Examining the relationship between music and music-based console games largely intended to be play by young people offers the possibility of examining what motivates and triggers a young person's enthusiasm. This opens the possibility of concluding how aspects of consoles and console game design can be adapted for the wider musical world.

Music-Based Console Gaming

Some of the most popular console games (designed to work on one or more of the games consoles in Table 1 above) are based on music. This report concentrates on the three most popular music-games of the last five years, as these illustrate the breadth of possible links between music-games and music making. These games are:

SingStar

SingStar is a karaoke video game launched in 2004 for the PlayStation 2 by Sony Computer Entertainment Europe. To date it has sold in excess of 4 million copies worldwide[9]. It is sold either as the software disc alone, or bundled with a pair of USB microphones. Like karaoke, playing the game consists of singing along to a backing track and following visuals and onscreen lyrics. Unlike karaoke, the microphones and game interfaces are equipped with pitch detectors. To make the activity a competitive game, points are scored depending on how accurately in pitch and time the singer's voice follows the original track. Usually, two players compete simultaneously. SingStar can be played at 3 difficulty levels. The harder the difficulty setting, the more accurately the singer must follow the pitch and timing of the backing track. Since its launch, there have been several versions of

SingStar and there are other games that work in a similar way to SingStar, for instance Karaoke Revolution.

GuitarHero

Guitar Hero was released on the PlayStation 2 in 2005 by games developer Harmonix[10]. The game has sold over 5.5 million copies to date[11]. One of the distinctive features of GuitarHero is that rather than using the game's console controller, it comes packaged with a guitar-shaped controller. Playing the game with the guitar controller simulates playing an actual guitar, albeit with five coloured "fret buttons" and a "strum bar" rather than with frets and strings. The game play consists of correctly playing along to a rock music backing track (rendered without the guitar track). Points are scored by how accurately you play the fret buttons and the strum bar in time with a scrolling on-screen guitar-neck which marks the choice and timing of which fret button to play. As you play correctly, the original guitar track is played into the backing track. The difficulty of the game increases by adding more notes (including "chords" and notes combinations of increasing complexity) onto the onscreen guitar neck.

Music

Unlike SingStar and GuitarHero which sit within gaming's "casual" market, *Music*[12] is more a music-making tool than a game. Created by the Welsh games

developer, Jester Interactive for the PlayStation in 1998, Music allows the user to compose, programme, sequence and record sounds and beats (either pre-loaded, or sampled by the user) using piano-roll style sequencing. In the words of the game's developer, Tim Wright:

> *'I toyed with dressing it up as some kind of game at first, but that seemed to detract from the real purpose of the product - to replace 4 track recorders and allow people to create credible music in their bedroom or lounge, for the price of a PlayStation game.'*[13]

There are a number of other similar tools either in production or in development (see Section 8: What Next?) but *Music* was the first of its type and the most successful to date, having sold over one million copies, making it the most successful music sequencing software ever.[14]

Who's this report for?

This report has been written with three main audiences in mind. It aims to give these audiences an introduction into how young people view music-games and to provide ideas for how games, or young people's facility with and enthusiasm for games might deepen their relationship with music. The audiences for this report are:

1. Games developers

Young people who play music-games were generally very keen on the music-games they played. However, many players had a broader active musical life (many played in bands or sang in choirs). Understanding how music-games can better interface with their broader musical activity may increase the scope and appeal of the games. Similarly, seeing how the games can help deepen the potential for young people to learn about music (without necessarily making music-games overtly educational) opens the possibility of games being used as part of a broader music education.

2. Licensees or Owners of Intellectual Property

In a world where YouTube, iTunes, LastFM and iMeem live alongside ever decreasing sales of physical recorded music (such as CDs) record and publishing companies have to be increasingly open and innovative when trying to find new and more diverse ways of exploiting their intellectual property. Music-games offer a number of useful ways to address the issues in today's market. They reconnect hardware (in this case, the console or peripheral) with software (the game/music carrier – the disc) in a way lost since downloads killed the monopoly that manufacturers had on recorded music fixation and production. To play the game and hear the music, you need the console. Moreover, games like GuitarHero, and SingStar offer new opportunities to exploit back catalogue and game-tools like *Music* offer the possibility of the creation of new intellectual property that could be co-owned. This report offers pointers of how this sector might develop in the future.

3. Music educators

"Educators" is taken in its broadest sense – full time teachers, developers of policy, informal and non-formal educators, professional musicians who teach either privately or peripatetically and young people's musical mentors. Whether adapting to young people's tastes in music, understanding the music world they live in or even considering the use of music-games alongside "traditional" instruments or teaching methods, this report aims to help music educators better understand the gaming world that young people inhabit.

How the research was undertaken

The research that makes up the body of this report was conducted between July and September 2007. It took the following forms:

Statistical surveys and narrative questionnaire

Two online surveys were completed in association with Youth Music. They were hosted on the youth-oriented magazine sites www.mykindaplace.com and www.monkeyslum.com. The first survey (with 1,526 respondents) offered background regarding the attitude to music and musical activity of young people. The second (1,163 respondents)[15] added general questions regarding music-based console gaming (have you played, which game have you played etc.). In this survey, respondents who indicated that they had played music-based console games (51% of the survey's respondents) were asked if they would be willing to take part in a further in-depth questionnaire. 270 did so. These positive respondents were then sent an in-depth questionnaire that was geared towards providing the report with narrative, qualitative responses, for example, exploring any relationship between music-based console gaming and other musical activity. This questionnaire was completed by 40 respondents.

Focus group session

Once the data from the questionnaires had been collated and analysed, a focus group session was held with six music makers at Stratford Circus, East London. The participants were aged between fifteen and seventeen. All of them had played music-based console games. Findings from the surveys, particularly the narrative questionnaire, were put to them and they were invited to comment.

Visit to Omega Sektor Gaming Centre in Birmingham

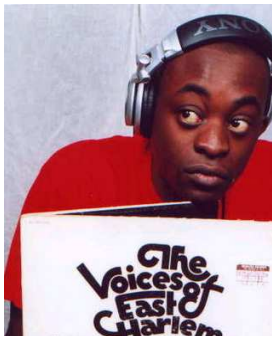
Omega Sektor is the biggest computer and console gaming centre in the UK. It has two floors of terminals and offers music-games amongst its range of activities. The author of this report went to learn how to play GuitarHero and get first-hand experience of music-based console gaming. The author played the game for three hours and found it great fun, but very difficult.

Review existing research on gaming and gaming in education

Existing online and hard copy research, mainly focusing on the use of commercial off-the-shelf computer games in education, were studied. Online and hard copy gaming magazines and forums were visited. These are listed in the bibliography.

Individual case-study interviews

Five interviews were conducted with industry professionals who have played music-based console games, and have either first-hand experience or insight into how gaming may be incorporated into professional music making. These were:



Charlie (35) is a DJ, producer, educator and writer based in London. Charlie is the originator of the Blacktronica club series, started at the Institute for Contemporary Arts, London and now resident at the National Film Theatre. Charlie teaches and mentors musicians non-formally, in formal schools and is a guest lecturer at the University of London.

Charlie Dark

Based in San Francisco, Owen (32) is a games developer, musician and founder of the band The GuitarZeros. The GuitarZeros are a gigging band that use GuitarHero controllers as a central part of their act.

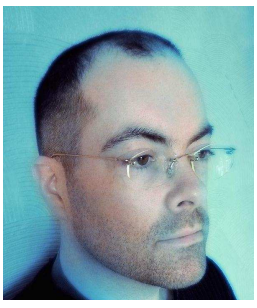
Owen Grace

DJ Mentat

DJ and producer Mentat (23) is based in Dartford, Kent. He has worked with the likes of Roots Manuva, Skinnyman and Seanie T. Mentat started his musical education and path into professional music-making on a PS1 running *Music*.

Gary Clay (24) has a background in music publishing and synchronisation and is now European Product Manager at EA Games. EA is one of the largest developers and publishers of console games, and has just launched the music/dance hybrid game "Boogie". Later this year, they will be launching the multi-instrument game *Rock Band*.

Gary Clay



Tim Wright

Games developer and musician, Tim Wright (40) formed Jester Interactive in 1995 where he developed the *Music* game-tool for the Sony PlayStation. He now runs his own multimedia company, Tantrumedia, and writes and records under his musical pseudonym CoLD SToRAGE

The responses of the participants in the questionnaire, focus group and interviews have been reflected in the body of this report.

Summary of findings

Based on the testimony of the questionnaire and survey respondents, the focus group participants, the interviewees and evidence from existing research, this report draws the following conclusions:

- Young people play music-games because the games are fun, sociable, challenging, and because the players love music.
- Music-games can provide a way into music for the tenacious and talented, however currently this is rare.
- Console games may provide an entry point into music for young people from low-income backgrounds.
- Console games may provide an entry point into music for young people who struggle to find the music that they love played or taught within the mainstream curriculum.
- Soundtracks in non-music games can also develop young people's interest in music.
- Young people believe that music-based console games have a role to play in supporting a broader musical education, and in inspiring them to be more interested in music.
- Music-games can introduce young people to many of the skills required to play other instruments (such as dexterity, inter-limb co-ordination, hand-eye co-ordination, pitch and rhythm), however, the transferability of these skills is currently limited. Console-based music tools are more successful at introducing transferable skills for music technology (such as sampling, step-edit sequencing and piano-roll arrangement).
- Playing music-games can help young people develop confidence for performance.
- Although some young people regard making music on consoles as on par with making music on "traditional" musical instruments, more believed that there was no comparison and that "real" instruments were a much deeper, more challenging and worthwhile experience.
- Because gaming is "play" it is regarded by some young people as lacking the purpose and passion of "real" music making. The low esteem of gaming in the eyes of some young people, and many parents, inhibits a deeper engagement with music-games.
- New and up-coming innovations in music-games will greatly increase the potential of creative music making in gaming.

1. Why do young people like music-games?

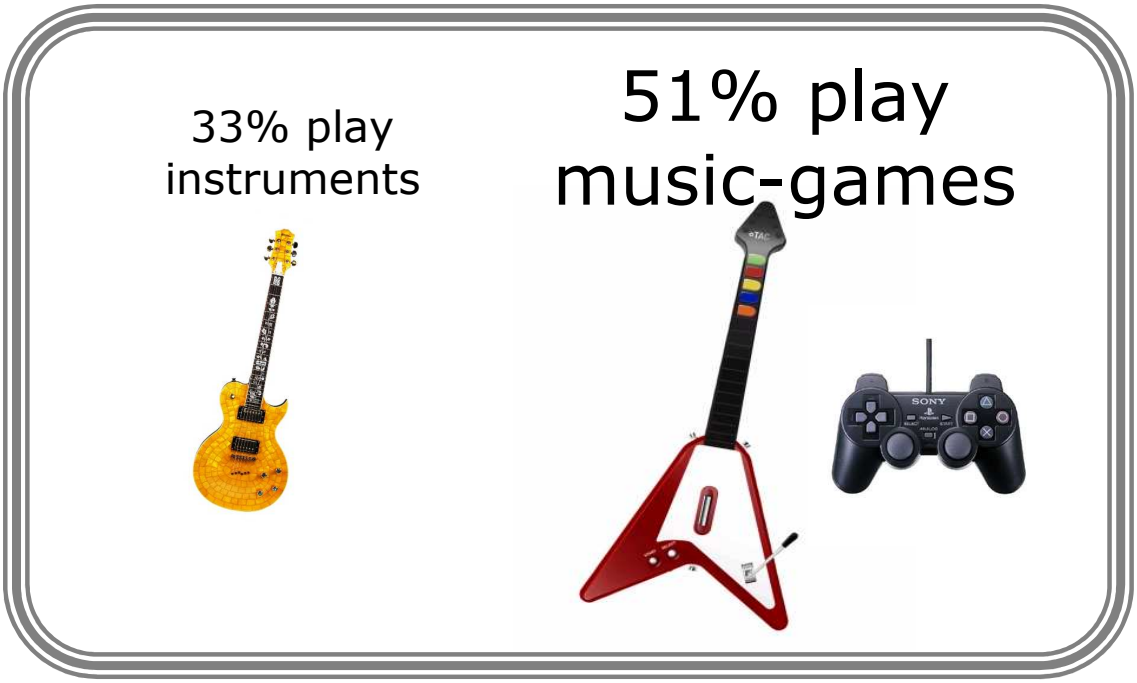


Fig 1. Survey respondents: musicians/singers c.f. music-gamers

In the second Youth Music survey with questions relating specifically to music-gaming, 33% of 1,163 respondents were either singers or played a musical instrument with 51% of respondents being players of music-based console games. Of the respondents that took part in the narrative questionnaire asking more detailed questions about music-games, all of the questionnaire respondents had played at least one music-based console game. By far the most popular was SingStar (77%) the second was Music (33%) and the third was GuitarHero (25%)[16]. The retention rates for players of music-games and instruments were similar, with 72% continuing to play music-games and 75% still singing or playing instruments. The ones who had stopped music-gaming gave reasons ranging from the console breaking, to finding new interests, to finding the game frustrating because they weren't good at the game:

'Because my family would laugh at me for singing (as i am rubbishhhh)'

The young people who still played console games were asked why they still played them (to find out what they enjoyed about the games – and why this enjoyment endured). Their answers, in Chart 1 below, showed motivations which could be divided into four main responses:

- The game is fun
- The game is sociable
- The game has musical content
- The game provides a (continuing) challenge

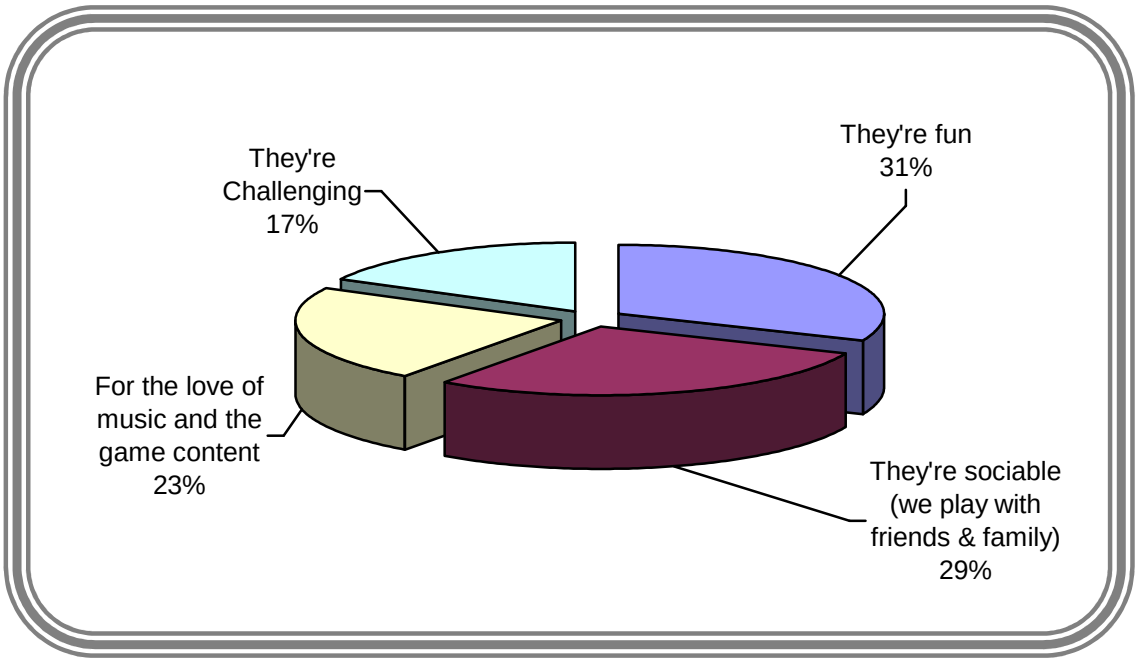


Chart 1. Why do we like to play music games?

These responses often overlapped within the same answer:

> *'Because SingStar has really good songs to sing along to and i just LOVE singing. It's an addictive game, me and my family love having competitions to get the highest score!'*

> *'Because there are levels i have never done also i just like playing games and therefore never get bored of them!'*

> *'It's really fun so when your bored you can be occupied for ages also its fun when i have sleepovers and play and try to beat all my friends also i like to beat my own score and i like getting better and better at it and all the music is really cool and not too old so everyone knows the words and rhythm, you can never get bored of the games'*

> *'It's the best ever type of game! :-D'*

The sociable aspect of music-gaming should not be underestimated. Doing stuff with your friends is a key motivation for young people, and it's always been there in music (it's why young people join wind bands, brass bands, rock bands, choirs or boys brigade). Tony Mott, editor of gaming magazine, The Edge put it like this:

> *'Every game is enhanced when it is being shared with friends and with music being the currency, not spacecraft, or race cars or falling blocks, it so much more easily lights the touchpaper*.'[17]

2. To what extent do music-games provide young people with a way into music?

DJ Mentat attributed his first steps into music production to buying *Music 2000* and a PlayStation 1 aged 14.

> *'The only reason why I bought a PlayStation was because of Music 2000. I didn't play an instrument before. I started on that. I hadn't thought of making music at school before, but I started DJing when I was about 12, and this progressed into wanting to make music.'*

Mentat chose to a PlayStation because of the cost.

> *'Being a cheap bastard, I wanted to find the cheapest way in. PlayStation and Music2000 was the cheapest way into music making. I did the same getting into DJing – just two belt drive Hi-Fi turntables, wired up to my trainset's transformers, so I could pitch-shift the music.'*

He felt that consoles could be a good way into music for young people with lower incomes and that music-based console games, or music-making tools may offer something to young people whose interests were not widely served by mainstream music education:

> *'There's definitely a kind of kid that is more likely to get into making music via console games than if you put a violin in front of them or sat down at a piano. Without wanting to stereotype anyone, a kid that listens to street music, and maybe lives in a town – they're definitely not going to be looking to pick up a violin, with a few exceptions. They're going to want to do what they're listening to – and that's not classical. You saw this with Wiley and Dizzee Rascal and the new kids coming up* [from the Grime/EskiBeat scene which grew from its roots in East London]*. Young kids are looking to imitate them not Beethoven. Also, they're not looking to (or able to) spend thousands of pounds on a studio set-up. Even a laptop and FruityLoops[18] costs £900 to get what's essentially an amateur set up.'*

However, questionnaire respondents made it clear that games in themselves only rarely led young people without a previous musical interest into music making. When asked whether playing a music-game had encouraged them to start playing a musical instrument, only 19% of respondents said yes. 60% of the questionnaire respondents already sang or played a musical instrument. Their music-gaming was part of broader musical activity.

The focus group participants were also sceptical as to whether playing music-based games would make you a more enthusiastic consumer of music. One commented:

> *'Playing games like SingStar or GuitarHero with pre-programmed music can make you hear new music that you haven't heard before, but I think it's far fetched to think that this will convert into making you want to go out and buy this new music.'*

Another added:

> *'I see music-games as stepping stones. You might be at a friend's and hear some music that you haven't heard before. It won't be unfamiliar when you hear it again, you'll start to get into it. All these games are just to show you that this music is out there – you should try it.'*

Gary Clay's experience at EA games suggested that there *is* a link between the music that the player is introduced to through games like GuitarHero, their interest in the guitar as an instrument, and their likelihood to take these interests further:

> *'Here at EA we have accounts with Napster that allow us to track the purchases and play of colleagues around the office. This may be a bad example, but it's been interesting to watch people who started out going to gigs by Andy Abrahams* [MOR crooner, and winner of The X Factor TV programme]*, having their ears opened to tracks like "John the Fisherman" by the rock band Primus, through GuitarHero. Tracking his Napster usage since he's been playing GuitarHero, I've been able to see that he's bought albums by Primus and other albums which have been introduced by the GuitarHero soundtrack.'*

Clay also observed that this connection can also lead to an interest in learning to play the instrument:

> *'I know that here at EA games, and I've been told this by colleagues and clients in other studios, many people have started guitar lessons because of GuitarHero. EA now has a guy who comes in to teach guitar to the people who work here. GuitarHero has helped make the guitar more cool, so more people want to get into it.'*

Non-music games as routes into music

It is worth noting that games other than music-games can lead young people into having a greater enthusiasm for music. The soundtrack is an essential part of almost every computer game. The best soundtracks add immense value to the experience of the game. Highly regarded musicians and composers now work for games companies, in the way they once worked in the film industry (for instance, Nitin Sawhney's lavish score for the PlayStation 3 game *Heavenly Sword* recorded over a year with orchestras in London and Prague). Games developers and publishers take this relationship very seriously, and are not only starting to work more closely with the existing music industry, they are in some cases duplicating functions that were previously the sole realm of record and publishing companies, like A&R. Steve Schnur, Head of EA Games' music division, EA Trax, sees the development of a deep relationship with the broadest range of musical content (and actively seeking this content out) as a key part of what defines the EA brand, and what can give it competitive advantage: To Schnur:

> *'I consider this job to be the ultimate A&R gig. My staff and I listen to a lot of music. We see a lot of bands. We track mix tapes, college radio and independent scenes all over the world. We have relationships with publishers, labels and artists on a global level. Most of all, we're enormously proud of our breakthroughs with independent music. Independents will always take risks to deliver daring new music and in turn, we can take a chance and deliver that music to the mainstream. When it works – like we did last year with Avenged Sevenfold – it is by far one of the most rewarding aspects of the job.'*[19]

One focus group participant, now studying music technology at college, was led deeper into music in via the music in non-music games:

> *'I learned how to play "real" instruments after I'd played games, but not music-games. I got into music because of computer games. I like computer games music. I heard different sounds, orchestras and guitars, but when I tried to recreate these I couldn't get close to the sounds I heard. You know how you get guitar sounds on midi keyboards? Generally they sound terrible. I wanted to get the real sound of guitars onto my music, so I went and learned the guitar.*
>
> *You've got something like Sonic the Hedgehog, and you've got that rocking music behind him. I like this music, not because of what the music is (it's not the kind of thing that I'd want to sit and play at home) but because of what's going on in the game. How they fit together. I like the connection between the action and the music. It can be rock, jazz, electronic, anything. From the games I got into film music. Not just the*

> *dons like John Williams, but other stuff – like the rock guitars in Kill Bill'* [composed by Metallica's Lars Ulrich and Wu Tang Clan's RZA]

The game Grand Theft Auto, developed by the UK's Rockstar North in 1998, has a sophisticated and deep relationship with music, even though it is not a music game. In the game, cars have a radio tuned into one of a number of "radio stations", each with their particular genre and playlist – they even feature a continuity DJ and spoof advertisements. Apart from a few pieces of original music, most of the music played on the radio is recreations of distinctive music that evokes a style or is archetypal of a particular genre. For instance in Grand Theft Auto III, on the "Head" radio station, a song plays by Scatwerk. In style, name and delivery, the song is clearly based on the work of German Electronic group, Kraftwerk. This music for Grand Theft Auto has proved so popular that the soundtracks have been released as albums in their own right.

In addition to young people getting into music making via computer gaming (and so opening their ears either to new music, or new instruments), some musicians and composers are developing distinct forms of music that are inspired by the aesthetic of gaming music in and of itself.

The basic pre-sampled electronic sound palette and the simplified sequencers (called "Trackers") that created early computer music for game consoles such as early versions of the Gameboy and the NES[20] has spawned a cult music scene of artists who use the limitations of this technology to create new music called "Chip Tune" or "Chip Break"[21]. Artists such as Ben Daglish and Tim Follin started their careers making early computer game music, and work in a broad range of electronic music for advertising, film and for pleasure.

3. What skills can music-games teach players?

In studies that have explored the use of commercial off-the-shelf games in formal education, the outcomes that games can help with:

> *'…can range from skill development, e.g. hand-eye coordination, concentration, memory, problem solving, or creation of an outcome based on the content provided…"*[22]

Music-games may offer some of these benefits, particularly related to skills needed to play musical instruments. Owen Grace from The GuitarZeros believed that this was the case for GuitarHero, which could offer way into music making for young people:

> *'As soon as I saw the game I thought "wow, this is going to be a great tool to get kids inspired to play the real guitar". As a guitarist myself, I realised that the controller makes a lot of the big leaps that you have to make to start to play the guitar. Two hand coordination, hand-eye coordination, rhythm and performance."*[23]

However, Gary Clay took a different view:

> *'It's not as simple as that – to be honest (and I'm a guitarist) playing GuitarHero is pretty bad for your technique. It can entrench some really bad habits for a player of "real" guitar!'*

In Gary Clay's opinion, the main benefit of GuitarHero was not in introducing technique, but in introducing the appetite for music.

For games to helpfully provide an entry point into music making on other instruments or devices, they have to teach skills which are transferable. This was the case for DJ Mentat, who saw *Music 2000* as central to teaching him the skills that he's relied on as a professional record producer:

> *'I learned every one of the basics that I know now on a PlayStation running Music 2000. I learned about midi, step sequencing, chopping up samples, beat programming. All the fun stuff'*

Questionnaire respondents concurred, with over three quarters of them agreeing that music-games could help if you want to play a musical instrument, or sing in a choir, church or band. The narrative responses could be divided into seven key benefits. The two most common were:

1. That music-games could be used to support practice and other musical activity, and
2. That games inspired the users to be more interested in music

The range of responses is outlined in chart 2 beneath.

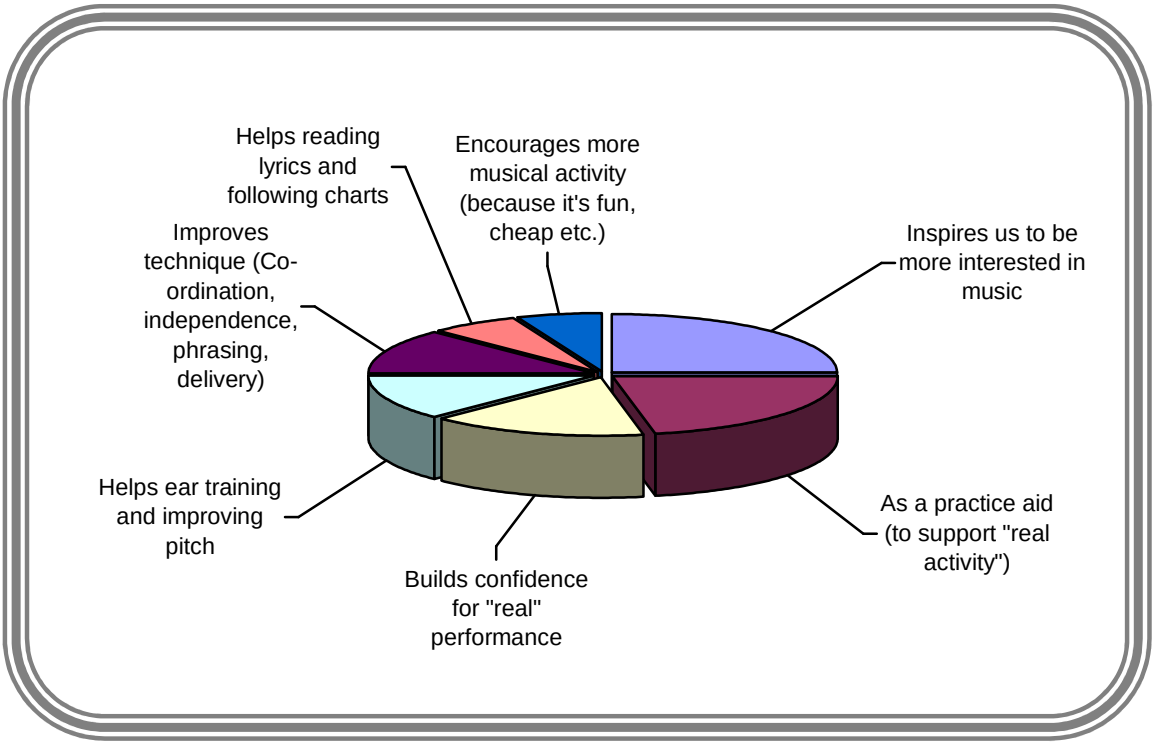


Chart 2. Here's how we think music games help our musical ability…

However, questionnaire respondents and focus group participants recognised a clear qualitative difference between playing music-based games and playing "real" instruments. When asked *"Do you think that playing a music-game on a games console is as good as playing a musical instrument, or singing in a choir, church or band?"*, the questionnaire respondents were evenly split, with just over half agreeing.

"A Safe Harbour"

The most popular reason why young people believed that music-games compared favourably to making music on "real" instruments were variations around music gaming both helping confidence and offering a "safe" facsimile of the real experience. When defining why music-games compared favourably to playing or singing a musical instrument, two sample answers illustrate the response from many others:

> *'BECAUSE YOU DONT HAVE TO SING IN FRONT OF LOTS OF PEOPLE AND GET EMBARASSED'*

> *'BECAUSE IT STILL MAKES YOU AS NERVOUS WITH AN AUDIENCE ON A GAMES CONSOLE AS WITH AN AUDIENCE WHEN YOURE SINGING FOR REAL'*

In his report, *Learning by Design: Good Video Games as Learning Machines*, the University of Wisconsin's Prof. James Paul Gee isolates 13 principles that good designers use to get new players to learn and stick with games. One of Gee's principles reflects the "safe harbour" that questionnaire respondents indicated that they valued. He calls this principle the "Sandbox" and writes:

> *'Sandboxes in the real world are safe havens for children that still look and feel like the real world. Using the term metaphorically, sandboxes are good for learning: if learners are put into a situation that feels like the real thing, but with risks and dangers greatly mitigated, they can learn well and still feel a sense of authenticity and accomplishment.'*[24]

Questionnaire respondents and members of the focus group agreed with this point even when they thought that "real" music making was better, where many conceded that gaming was *'good for practice'*.

Fun & Challenge

The second most popular reason for music-games comparing favourably with "real" instruments was that the game was more fun than the real experience. In common with the responses to why young people play games at all, this was often linked to the fact that you can play the game with friends.

The element of fun in learning is significant. It is a very powerful, motivating driver. Gee's writing reflects this principle too. He goes deeper to explore the "fun" principle, and links it to the idea of challenge. Gee calls this principle "Pleasantly Frustrating". He describes it as where:

> *'Learning works best when new challenges are pleasantly frustrating in the sense of being felt by learners to be at the outer edge of, but within, their "regime of competence". That is, these challenges feel hard, but "doable". Furthermore, learners feel – and get evidence – that their effort is paying off in the sense that they can see, even when they fail, how and if they are making progress."*[25]

For focus group members and questionnaire respondents, not meeting this principle was often given as one reason why they believed that "real" music making was better. One focus group member commented:

> *'If you want to use gaming to get kids into making music, you'll have to make the games harder.'*

However, making the games harder (or at least harder from the start) offered a warning to games developers. In the words of one questionnaire respondent:

> *'It's much more complicated in real life. If a game was that complicated then you wouldn't be appealing to such a wide range of people'*

The limitation of music-games (with unanticipated positive effects)

Even where music-games were seen as a way into music making, the focus group members were frank about the current potential of music-gaming to lead to other music-making, and they believed that music-games as an entry point were a clear second-best choice to learning an instrument from a young age:

> *'If you really want to get into playing a musical instrument, it's good to start when you're young by playing an instrument, so that feels natural. But if you don't have a chance to play an instrument, games can be a good starting point.'*

Questionnaire respondents also added other reasons for limiting the effectiveness of music-games in supporting other music-making. Music-games currently fall way short of the creative potential of almost any "real" instrument, but using them as entry points was also limited by games interfaces not "feeling" similar enough like the musical instruments that they emulated (for instance, comparing the sophistication of a "real" guitar with the GuitarHero controller, or the current SingStar microphone's inability to distinguish the difference between vowels and consonants).

Another limitation is linked to a facet of music-gaming that others perceived as a strength. Some questionnaire respondents, and three case study interviews, felt that the flexibility and independence made possible by music-based console-games could suit young musicians who preferred to develop on their own or at their own pace. As DJ Mentat put it:

> *'I loved school, but for the wrong reasons. I liked to find things out for myself. With console music-games you can find out and learn for yourself. Also, when you start, you don't have anyone who's a professional in your social circle to show you the way, so you HAVE to teach yourself. What's more, you don't want to show anyone when you start out. You want to be on your own so you can make the mistakes.'*

However, many more young people prefer to develop with support. Some questionnaire respondents and focus group participants observed that the

inability for games to teach or coach you was a handicap. Although they felt they could improve, they felt that without tuition their progress would be slower.

For Mentat, there were other limitations of Music that had unanticipated positive effects.

> *'I tried making Garage music on it first, but it wasn't until I made hip-hop on the PlayStation that I really found the right sound and genre for the machine.*
>
> *I didn't know why this was at the time, but now I know it's because it's a 12-bit machine. While this makes it the wrong machine to get that polished sound that you need in garage, it's exactly right for hip-hop. The compressed, low bit-rate sound that Music 2000 created gives you that that really crunchy, messed up sound that people loved, but had forgotten because the professional machines of that time (around 1998) had already progressed to 16 or 24 bit. That's the absolute charm of working on the PlayStation – it tried to make an easy way of making music, but accidentally created the kind of sound that hip-hop heads loved.'*

Another limitation that he believed helped his musical development was the limited memory of the PlayStation console:

> *'I'd have to finish one tune before I started another (as the machine would only hold one tune at a time). I'd leave the machine for five days at a time as I kept working on the same tune. This was a problem, but it also taught me a really good lesson as well: to never start a new tune until I'd finished the last one. In the age of unlimited memory, where it's easy to have 100 unfinished tunes, it's like taking you back to the discipline of tape.'*

4. Is there a link between music-games and performance?

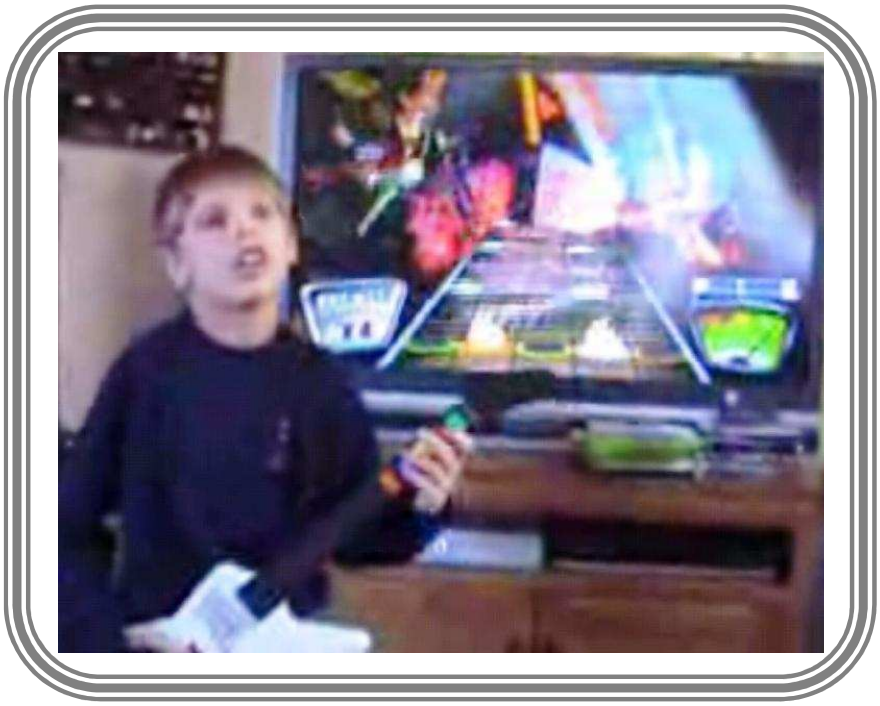


Fig 2. "*GH2 - Psycho Freakout - Expert (8 years old)*"[26]

SingStar and GuitarHero are both games which involve performance as part of their game. Even *Music*, according to Mentat, encouraged him to "perform" his music (insofar as once he had recorded it, he tested his pieces by playing them as part of his DJ sets). But it is the players of GuitarHero who have particularly taken to the performance element of the game. This is as true for adults as it is for young people. This year's Download Festival (a heavy rock festival at Castle Donington) in June featured a GuitarHero tournament, the game centre Omega Sektor in Birmingham held a GuitarHero tournament on its opening night and GuitarHero nights are starting to appear at live music venues around the UK (for instance, at Carlisle's Brickyard)[27]. Owen Grace felt that this performance was of value and made GuitarHero distinct from other games:

> '*Uploads to YouTube of kids as young as four show the connection between GuitarHero and performance* [see Fig 2. for example of YouTube screen grab]*. Parents and friends are proud of the achievement and want to broadcast it. There aren't any uploads of kids playing Grand Theft Auto really well. There's a performing element to GuitarHero which is very important. They upload clips of GuitarHero because it shows their skill and they're proud of that.*'

Testing this contention on YouTube by searching for clips of people playing Grand Theft Auto (or other non-music games) yielded very few successful results.[28]

This makes music games totally different, and to the music sector at least, arguably vastly more significant than any other video games. The motivation to perform, to record yourself performing and to share this sits at the heart of what motivates young people and their parents in today's world of Pop Idol and X Factor; where uploads of content like the one pictured above can garner more views than a successful orchestra can have attendances in a year.

If we are to fully grasp gaming's potential, we must be comfortable in this reality.

That being said, the focus group participants felt there were many occasions in which gaming performance and "real" performance could not be compared with one another. They contrasted the deeper experience of "real" music making with playing music-games. In addition to the "buzz" you get playing real instruments in front of real people, they identified a crucial difference between performing video games and "real" performing:

> *'Take a church choir – you're singing with a passion. With a game you're playing for fun. The purpose, the intention of your singing is really, really important to how far you can go. It has more of a meaning to it. Also, when you're playing a game, there is limited scope to express yourself. The test is to show people what they* [the player] *can do and to see if they* [the audience] *can appreciate it. If they don't appreciate it, you'll know! If they do, it goes in a circle – you'll start to get into it more, play better…'*
>
> *'You either play music to show off or because you want to. But when you make your own music it's most often to explore and express your ideas. When you're playing (or performing) GuitarHero it's not "share my passion with me" it's "look at this and see how good I am".'*

The idea of a purpose to music making (for instance, in singing in a church choir, or playing your own songs) was crucial. Passion for music performance and creation come from a connection with the content, and is augmented when the performance has a clear purpose. The focus group thought that this was something that games could not compete with. Games are fun, but they are purposeless. They believed that this would inhibit the quality of music that you could make, irrespective of the quality of the game or the sophistication of the console interface.

5. Faced with games' limitations, how might music-gamers progress?

As discussed, many young people who play music games do so as a part of a broader musical life (for instance, by playing an instrument of by singing in a choir). But what of young people who have entered music with music-games as one of their primary forms of musical expression? How do they form a deeper connection with music? How do they progress?

In his interview, Charlie Dark identified the limitations of computer games as a possible motivation for looking elsewhere for a deeper musical experience.

> *'Often music-based games or console-based music making tools promise a lot, but don't deliver. People switch when they become frustrated. This isn't a bad thing – it just means that their musical ambitions are bigger than the game will allow them to create.'*

Mentat followed a similar path when the outer edges what was possible with *Music* started to rub against his growing musical ambitions:

> *'I started looking beyond the PS when I got more developed. I wanted to put vocals on my tracks, so I knew I'd have to learn how to use other machines so I could record from live, instead of cutting up a cappella tracks as samples. That was because I was socialising with MCs and stuff, so I progressed onto ACID [Acid Music Studio – a Sony audio and midi recording program for PC]. The jump to this wasn't scary. It looked familiar to my PlayStation experience.'*

Moreover, the limitations of the program in having to finish one song before starting the next, also led him to explore other musical genres.

> *'The stuff that I do on the PlayStation - it's performance music. It's like the old soul music of Motown. In those days, you had to keep doing take after take until you get a good take. I'm getting more and more into listening to how they used to arrange old 70s and 60s music, like in the days of Motown. It's very inspiring.'*

6. How do attitudes to gaming affect the potential of music-games?

It's only a game…

One factor that seems to be inhibiting music-games from connecting more deeply with the wider music sector, and therefore inhibiting a deeper impact of games as music-making tools, instruments and practice aids, is the simple fact that they are games.

For the focus group participants, this was the greatest factor inhibiting their scope to explore music-based games. They compared making music on a console directly with making music on a computer:

> *'The main difference between games and computer-based music for me is that when I'm sitting at my keyboard with a mouse, I feel more like I'm doing the job of a producer, and not just playing a game like I'm just a kid'*

This view was not only theirs; it was shared (and sometimes prompted) by parents:

> *' If you were on a PlayStation all day, you'd just be nagged to get off. You couldn't be seen by your parents to be on your PlayStation all day, even if you were making music. If you're doing the same thing on a computer, you look like you're working. You look like you're doing more. You'd be more likely to get away with it.'*

Another participant found the same, and believed that this attitude inhibited him from making music on a games console:

> *'They* [parents] *just see a PS as a game. Consoles are something to pass the time when you've got nothing better to do. They waste time. On a PC, it's very unlikely that your mum will say "get off the PC". You'd have more time on it, and you could probably do better.'*

Both the the simplicity of a games consoles and the whole body language associated with gaming robbed gaming of credibility in their parents' eyes:

> *'It only has a few buttons compared to a computer keyboard but it's not just that – the position that you play a computer game – often lying back on your bed or your sofa, also has an effect on what your parents think of the seriousness of a gaming console. You don't look like you're doing*

anything. You look like you're getting ready to go to sleep! The body position is important.'

This compared poorly to "traditional" instruments:

'If you're a parent and you walk into you son's room and he's just stringing along on a violin, you're not going to yell at him. You're going to say "oh good, he's practicing". If you came in, but he was still doing the same thing, or something just as musical on a PlayStation, I'm sure they're going to tell him to do something more useful.'

This point was also reflected by DJ Mentat in the world of professional music. Although professional producers respected his work, and wanted him to recreate the sound that he had arrived at with his PlayStation, the fact that he developed his sound on a games console got in the way:

'It's only since I started working with a bigger set-up, and working more professionally that I've revealed to people that a lot of my music was created on a PlayStation. I always used to hide the fact, because people (professionals) did look down on it, rightly or wrongly'

One focus group participant felt that this problem might be generational, and could see signs that this "prejudice" could change in time:

'Parents can be closed-minded and never see skill or usefulness in playing on games consoles. This eventually is going to change. You can already get real cars which have controls which have borrowed ideas from console controllers [for instance, the increasing number of cars with controls reminiscent of games consoles built onto the steering wheel housing] *so the ideas on consoles are moving into the mainstream and are gaining acceptance.'*

The development of more overtly educational games (like Dr. Kawashima's Brain Training, which has a music ear-training function) and more active forms of gaming (for instance, the Nintendo Wii) were two other factors that might accelerate this change in attitude. Regarding the Wii, one focus group participant observed:

'As these get you up, active and moving, they're seen as "better" by your parents. They make you look like you're doing something and have definitely changed attitudes to gaming. Even though you may be doing nothing different than you were on a traditional controller.'

Games' isolation from the broader musical landscape

Another factor which inhibits music-games development as musical tools is that they sit outside the mainstream of other musical activity and all of the culture, support and infrastructure that makes up the wider musical world. For instance, Charlie Dark observed that there are very few online players' forums for music-games (either to support game players or to feed observations back to developers) which exist either formally or informally across the music sector:

> *'Until now, music based games haven't really exploited the possibilities opened up by the online world that thrives in other music media, for instance, by creating collaborations and communities across the internet.'*

As games, they also have a lack of interoperability that is hampering their development, as they cannot easily connect with other musical instruments or tools. This is partly because they have been developed in isolation as games (with developers' next project to more likely be a first-person-shooter or racing game than a deeper music game). It is also partly due to games developers wilfully keep the games' operation proprietary, to "lock-in" users. For instance, the first GuitarHero controllers could only be connected to the PlayStation.

Without direct connections or interoperability with other devices, music-gamers can end up isolated from a broader musical landscape. This means that, unless the music maker playing the game is unusually talented or tenacious, their explorations with music-games can end up as mere blind alleys. DJ Mentat found this with his early work with a PlayStation;

> *'I was lucky. I had success with some of my earliest tunes, so people would invite me to their studios. But this was a problem in the early days too. I'd walk in and they'd be using Logic and Cubase* [professional music production software packages] *and they'd point at the machines and want me to work but at that time I didn't have a "Danny La Rue" how to use them!'*

As there was no facility to synchronise with other musical devices or computers (for instance via MIDI or MIDI time code), Mentat had to record his tracks as audio if he was going to use them with work. This lost the flexibility afforded by having the tracks as sequences. Tim Wright had originally explored the idea of incorporating MIDI into the development stages of the *Music* program:

> *'MIDI was always a consideration. In fact, we did develop an audio sampler/MIDI interface for use with PlayStation One. Unfortunately, Sony re-designed the PS1 and removed the port we were using, so this never saw the light of day. In terms of being compatible with other products, this is something that raises eyebrows in production meetings. Once you*

> *open the door to other companies and their software it means you have to keep in step with their software to maintain compatibility. You are also at their mercy in terms of the robustness of their software.'*

However, this attitude is starting to change, as some developers see that the benefits of games systems that are more compatible with existing computer hardware can outweigh the disadvantages. The latest GuitarHero controllers now connect to their console via USB. This means that they can also connect via USB to computers and thus to many other music-making devices. Owen Grace used this innovation to his advantage when he was setting up The GuitarZeros:

> *'The "guitar" is connected to the computer by USB. The computer then recognises the "guitar" as a joystick. These are then converted into midi continuous controller/note on/off messages through Max MSP* [a midi mapping and interpretation program]*.'*

The developers of music-games are often keen music enthusiasts (for instance, Tim Wright, developer of *Music* continues to be an active recording musician), but as they work in the games sector, they can be isolated from a range of connections with music makers. Sometimes this means that potential opportunities for music-games are not exploited. Both Charlie Dark and Mentat felt that the connection between Grime music and the *Music* program was not fully exploited by Sony.

Charlie felt that Sony could have prospered by making more of the connection between this nascent music genre and their console game:

> *'There have been moments when music made on console games has been successful and the manufacturers have not taken advantage. There should have been a Wiley edition PlayStation!'*

Mentat also saw this as a missed opportunity:

> *'Sony didn't really get behind this phenomenon when it was happening. They should have lapped it up – because it [Grime] was their sound. They could have milked this connection, but they didn't.'*

Tim Wright conceded that this had caught them by surprise, but believed that this connection proved the power and usefulness of the *Music* program:

> *'We were late in learning about this, and it was only by chance that we saw an article on the BBC website about it. I think it's great that people took to the program, and used it to let their creative spark see the light of day! It does make me proud that we achieved what we set out to do when*

I designed the product, and that was to give kids and adults the power to make their own credible music. The fact that it legitimised the home console as an educational and creative device and not just a pastime involving racing and shooting was a huge bonus.'

7. How can developers improve music-games?

Young people who took part in the questionnaire and focus group had a number of suggestions for developers to improve their games. Here is a selection of some of their more common requests.

8. What's next?

There are many of the young peoples' suggestions and demands for the development of music gaming addressed in new and up-coming games or innovations in existing games.

"Make them mobile"

Charlie Dark felt that the ability to make music on the move was essential for young people's ability to really harness the potential of music-games. There has been a version of *Music* developed for the Gameboy Advance handheld, however, Charlie felt excited by one upcoming game that is in development specifically for mobile use:

> *'There might be a move back to console based music for young people making electronic black music when the Beaterator game comes out on PSP* [designed by Rockstar Leeds in the UK and slated for release in 2008]. *This new game has one of the keys to success: a credible, high quality bank of sounds* [many of the sounds have been developed by renowned record producer Timbaland]*. Sounds are the key. What's more, from what I know, you'll be able to download more sounds and sample packs to keep expanding the capabilities of the "instrument".'*

Mobile music-games or tools are appearing in other forms too.

Traxxpad

Traxxpad Keyboard "Skin" screenshot

Traxxpad is a music making tool, launched in June 2007. It has pre-programmed sounds and the ability to sample audio onto it. The program's interface has been developed so it can have a variety of versions that look and feel like professional

music-making tools. For instance, one "skin" is designed to look like an Akai MPC music production workstation. Professional musicians (for instance, producer Morgan Zarate) have already started to use this program as a portable sketchpad for developing musical ideas, in much the same way that Yamaha's QY series was used by producers and songwriters in the early 1990s.

Jam Sessions

Jam Sessions demonstrated by Andy Van Doren on MySpace Video

Jam Sessions is a rhythm guitar emulator for the Nintendo DS Advance, released in September 2007. The screen of the console has a programmable "chord palette", that will determine which chord is played by each of the console's buttons. The touch screen has a playable "string" on the surface, so strumming the touch pad will play the chords. Picking is not possible, and the palette of chords is limited to eight at a time (the number of buttons on the console)

In an advertisement for the game's developer, UbiSoft on MySpace Video, Andy Van Doren, lead guitarist for the San Franscisco band Dub FX says:

> *"If you're looking to start playing the guitar, and you want to get acquainted with music, this is a good way to start."* [29]

Although this testimonial is sponsored by the games developer, one can see how this tool represents a step forward from GuitarHero in opening the musical possibilities of the games console. As it is an open tool, it also will allow players

to create "mistakes" (and hear the musical consequences) – an essential part of musical development.

"Make them interactive and interoperable"

Innovations to make music-gaming more interactive rely on groups of musicians being able to play on the same game (prefereably playing different instruments) and the facility to download or upload musical content onto the web. In *Rock Band*, Harmonix (the developers of GuitarHero) have developed a game which starts to allow players to do this.

Rock Band

Rock Band will be released in early 2008 and will feature a guitar controller like GuitarHero, microphone like SingStar (although with the refinement of a phonetic detector, which can detect whether the singer is singing the lyrics correctly) and a new feature: a drum controller. The players, either playing as a group or playing individually, will play these instruments along with a backing track, much like GuitarHero or SingStar, but will also be able to compete and form bands internationally via the Xbox Live online network.[30]

Although players will not be able to upload their own content, the relationship between the recorded music and the game will be more sophisticated. In addition to the songs pre-loaded into the game, players will be able to download albums specially prepared for the *Rock Band* format (for instance, Nirvana's Nevermind) and will be able to link directly to iTunes to buy the original album that the game's music is based upon.

Boogie

Launched in August 2007, Boogie mixes a dance game with a karaoke game (this was a specific request of one questionnaire respondent). However, according to the game's developer, EA Games, the point of Boogie is as much to do with the content that the user generates, as with game play.

> *'It's much more about interactive content – being able to create your own music videos, more than progressing competitively though the various levels of the game. It has a quite sophisticated movie editor as part of the package.'* [31]

However, interoperability and "closed" platforms are currently holding the game back from a broader online application:

> *'Currently the content that has been created in this game stays within the console. The plan is (and always was) to have this online so user generated content can be shared. However, the online space with Wii is owned and run by Nintendo. It's a closed space at the moment. EA don't yet have an agreement so we (a third party) can add content to their online space. This means there is no way to share user generated content online.'* [32]

"Make them more realistic"

Focus group participants were forthright in their view that how closely a game's interface resembled a "real" instrument was a vital part of its credibility, both in their eyes, and the eyes of their parents. They concluded:

> *'It has to be as sophisticated as the real thing to rival or compare to the real thing. It has to "look like you're doing something" and not just playing a game'*

Games with instrument interfaces currently have a long way to go to make this leap. As Gary Clay observed, regarding the GuitarHero controller, the leap from this to a "real" guitar is not only a large one, but also learning the technique to play a GuitarHero controller could even teach you bad habits which could hamper the transfer a "real" guitar. However he was more optimistic about the ability for the drum controller in *Rock Band* to enable a player to transfer to a "real" drum-kit.

> *'I'm a drummer too and I've played a lot of Rock Band while it's been in development. The "drum-kit" in Rock Band is almost identical to playing a real drum-kit. Genuinely, if you played a lot of Rock Band drum-kit and get good at it, you could make an easy transition to a real kit. It's much, much closer to the technique needed for the "real" instrument, than with a GuitarHero controller. I could definitely see young people being able to go straight from a Rock Band drum-kit to the real thing and being able to play it.'*

What about classical music?

Wii Music features a number of applications and will be released in December 2007. One application is the "Wii Orchestra". Using the Wii remote and Nunchuk, a player can "conduct" the virtual orchestra, affecting the speed of the music, however this application seems very rudimentary.

The sophistication, emphasis on technique and progression to large ensembles puts a gulf between where music-games currently and where they would need to be if they are to be useful tools in the development of classical players. Moreover, the limited commercial appeal for classical music (particularly amongst young people) makes it unlikely that games developers will move into this direction.

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9. Conclusion

A world in which young people are composing music on a games console music-tool (then licensed through the games developer's online network), or performing with their GuitarHero controller in a mainstream band, or conducting a virtual orchestra with their Wii nunchuk is not here yet. But given the popularity of gaming culture to our younger generations, games developers' ever more sophisticated games and console interfaces, and the music industry's adaptation to a rapidly changing sector, this world is not inconceivable. Given the pace of change, this future is likely not that far away.

For owners of intellectual property, the challenge mirrors the one that they are facing in much of their business: how to best profit in an age when consumers are demanding more control of the content that they are listening to. Twentieth century media such as CDs do not offer consumers the interactivity that they increasingly demand. Van Toffler, President of MTV Networks, owners of games developers, Harmonix commented:

> *"The problem with CDs is that the value proposition got sort of funky for our audiences…They are reluctant to pay $20 for a CD that has one song they like. Now with Rock Band, they'll be happy to pay a couple of bucks for a song they interact with repeatedly and get scored on their performance in"*[33]

The major publishers are already starting to explore the changing landscape – *Rock Band* has agreements with all four publishing arms of the major record companies. However, the next stage is for intellectual property owners to get behind this sector and creatively explore its deeper possibilities (for instance, via interactivity and user generated content). In this way, they might be able to create, share and exploit new intellectual property which will almost inevitably be created through music-gaming, and create sustainable income streams from gaming, in addition to the exploitation of back catalogue.

The options open to the music education sector are ignore the sector and to continue to see a separation between "real" music making and music-gaming, and to only cater for the former or to start to explore ways that the enthusiasm, appetite and in some cases aptitude for music developed via music games can be incorporated into a broader music education.

The question for developers is more straightforward: how can music-games best develop to increase their appeal? One answer is to realise that these games have a deep connection to the wider music world, and to explore and exploit this connection wherever and however possible.

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Notes

[1] Mott T. *"We're putting the band back together"*. Cover feature in Edge Magazine, November 2007 (Bristol: Future Music 2007)

[2] I have used quote marks around the words "real" and "traditional" to denote music making that exists beyond music-gaming.

[3] The report defined "gamers" as ' someone who has played a game on a console, a PC, the internet, a mobile, a handheld devices or via Interactive TV, at least once in the last 6 months' The total sample size for the survey was 3,442 individuals across an age range of 6-65. Source: Pratchett R. *Gamers in the UK: Digital play, digital lifestyles*. (London: BBC 2005)

[4] Ahead of Watching TV, Films – DVD, Video Films – Cinema, Talking to friends on the phone, Reading Books, Reading comic/magazines, Listening to music (e.g.MP3s, CDs), Surfing Internet websites (non-e-mail), Mobile (non-phone calls e.g. texting), Listening to the Radio, Reading/Writing e-mails. Source: ibid

[5] Source: Hutton. W. *Staying Ahead: the economic performance of the UK's creative industries*. (London: The Work Foundation 2007)

[6] Source: http://www.gamesindustry.biz/content_page.php?aid=13334 (accessed 20th July 2007)

[7] Souce: http://www.joystiq.com/2006/05/25/games-sales-figures-show-online-is-key/ (accessed 21st July 2007)

[8 8] Kane P, *The Play Ethic: A manifesto for a different way of living* (London: Macmillan 2005)

9 Lees J M 25th 2006 "*Games sales figures show online is key*." Source: http://www.gamesindustry.biz/content_page.php?aid=14463 (accessed August 7th 2007)

[10] Harmonix was purchased by Viacom's MTV Networks for $175 in 2006. Demonstrating the manner in which games are viewed as part of the wider future of music, in their press release, MTV commented:

> '*The acquisition of Harmonix demonstrates MTV's commitment to music and furthers its strategy of engaging passionate music fans through a deep and immersive multi-platform entertainment experience. With the addition of Harmonix's strong music gaming titles, MTV will enhance its music-based universe of entertainment, news, gaming, and interactive content offerings, and increase audience engagement and time spent with the brand across all screens.'*

Source: Harmonix/MTV Networks Press Release http://www.harmonixmusic.com/p092206.html (accessed August 9th 2007)

[11] http://investor.activision.com/releasedetail.cfm?ReleaseID=263473 (accessed August 8th 2007)

[12] This includes all the game's derivations and rebrands, such as Music Maker, Music 2000, Music 3000, MTV Music Generator and Pocket Music for the Nintendo Gameboy Advance console

[13] Interview with Music 4 Games online magazine, 02.02.06. http://www.music4games.net/Features_Display.aspx?id=82 (accessed 30th September 2007)

[14] http://www.mobygames.com/company/jester-interactive-publishing (accessed August 7th 2007)

[15] The mode age for survey respondents was 16 (25% of respondents). 70% of the respondents were between the ages of 14 and 18 years old in the following proportions: age 14: 11%, age 15: 16%, age 16: 25%, age 17: 10% and age 18: 8%.

[16] It should be noted that the first survey was conducted on both MyKindaPlace.com (a website designed predominantly for girls, and MonkeySlum.com (a website designed predominantly for boys). The second survey was only conducted on MyKindaPlace, so the gender of the second survey, and therefore the narrative questionnaire was almost exclusively female, with 89% of the second survey's respondents being girls. This may not have affected the overall numbers of gamers – for instance, the BBC Digital Play Digital Lifestyles report found that:

'Contrary to popular belief, the gender split between gamers is fairly even across all age groups. The stereotype of a large gender gap in gamers - in any age group - is untrue'.

However, one outcome of the gender bias in the second survey and narrative questionnaire may have been the preponderance for playing SingStar over other music-games. SingStar is marketed primarily at a female audience.

[17] Mott T. 2007 *Frontispiece Editorial.* Edge Magazine, November 2007 (Bristol: Future Music, 2007)

[18] FL Studio (formerly called Fruity Loops) is an entry level computer music production workstation. Assuming the user purchases the software legally, although the full version can be bought for around £240, there is an "Academic Version" available online for £45.

[19] Interview with Steve Schnur, Worldwide Executive of Music and Marketing, Electronic Arts, 23rd June, 2006. Source: http://www.music4games.net/Features_Display.aspx?id=99 (accessed August 27th 2007)

[20] Nintendo Entertainment System, released in 1985

[21] See http://www.chiptune.com/ (accessed September 12th 2007)

22 Heald. McFarlane and Sparrowhawk. *An exploration by TEEM of the contribution which games can make to the education process.* (London: TEEM 2002)

[23] Telephone interview with author, 8th August, 2007.

[24] ibid

[25] Gee J P. *Learning by design: good video games as learning machines. E–learning, volume 2,# 1*, (Wisconsin: University of Wisconsin Madison, 2005)

[26] http://www.youtube.com/watch?v=3yEjyuw42YY (accessed 30th September 2007)

[27] This phenomenon is more advanced in the US. I found over 15 venues and bars that featured a GuitarHero night (see: http://www.gamerevolution.com/manifesto/view.php?id=278, accessed August 14th 2007)

[28] The string "Grand Theft Auto" yielded 33,600 results, but on the first 100 clips ranked in popularity order only 2 featured players of the game. Another search with "Player" added to the string yielded just 726 results. A search for GuitarHero yielded 65,600 results. On the first 10 pages all but 7 of the first 100 clips ranked in popularity order featured clips that did not show people playing along with the game – either showing how good or how bad they were. www.youtube.com searched on 26th September, 2007.

[29] http://vids.myspace.com/index.cfm?fuseaction=vids.channel&ChannelID=173422344 (accessed 26th September, 2007)

[30] In the short term it is not clear how well this online network will be able to render real musical collaboration. Innovations such as the now defunct Rocket Networks tried to create virtual bands and online networks, but they were always hamstrung by lag or latency of internet connections making real-time collaboration all but impossible. The current level of latency for Xbox Live is somewhere between 32msec (see: http://uk.xbox.gamespy.com/articles/598/598420p1.html) and 150msec (see: signatures http://www.petitiononline.com/XBLhost/petition.html). This is like playing a concert relying on an echo bouncing from a wall of between 16 and 75 feet away.

[31] Interview with author, 5th October 2007.

[32] ibid

[33] Tofler V. Quoted in Kohler C. *Guitar Heroes*, Wired Magazine October 2007 (New York, USA: Wired 2007)