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"Murmuring Membranes: Towards A Deeper Understanding of Rhythmic Interactions Across the Man/Machine Interface"
&
"Metronome crescendo"

MA (Hons) Digital Games Theory and Design

(2008-09)

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Abstract:

This Written Dissertation will explore Rhythm Music Video Games, and the possibilities of games specifically designed to induce rhythm in players. Many contemporary successful rhythm games (*'Guitar Hero'* and *'Rock Band'*) have not strayed from the template of 'Simon Says' - pushing buttons in time to music, yet innovation is occurring in hybrid games. The main aim of the dissertation is to identify fresh ways to instill rhythm within videogames, whether it is in directly haptic forms of force feedback (vibrating controllers) or as gameplay mechanic. It is an investigation into what makes good dance, and the future potential where technology and dance fuse. It will explore how rhythm games offer a seductive and hypnotic way of man/machine interface where players enter subconscious flow states similar to musicians.

There is room for innovation in the evolving medium of dance orientated games especially when combined with the tentative new motion capture software released soon. Here games will mine data from a moving body, and reward it for rhythmic control. Consequently, the aim of the companion Design Document "Metronome Crescendo" is to push current Call/Response interactivity – using this new motion capture software as a solution to evolving the Call/Response mechanism inherent in all Rhythm Games. The solution set out in "Murmuring Membranes" is too highly theoretical and not pragmatic enough, until at least the advent of Quantum Computers.

<u>Acknowledgements:</u>

Contents:

Chapter One – Introduction

Rhythm is a subject close to the heart of every human being as hearing is the first sense developed in the womb – it is faced from conception. Logical pulses represent stable life and the comfort only pattern recognition can bring. The organs of the inner-ear lend the sense of physical and mental equilibrium required to function on a day-to-day basis. Rhythm is underpinning all of everything in existence - at the component atomic level atoms vibrate, and orbiting elements of the Cosmos are bonded by gravitational attraction. From atom to galaxy all is machine that transmit energy to perform. These transmissions are in many ways a dance of membrane oscillations, and as shall be discussed it can be argued that players of Rhythm Games are interacting with machines in the most simplistic, repetitive binary method possible, resulting in entrancing player experiences. The 'Simon Says' style broadcast method issues a Call for communicative interaction, which players follow up with appropriate feedback - the Response. Measuring rhythm and dance is at the vague and indistinct boundary between man and machine when engagement occurs both through Game and Music interaction. The Repetition in playing these games is key to their appeal, and very similar to Freud's concept of Fort/Da (1920)[1], where people are drawn to experiencing oscillations as a kind of binary duality of throwing things away and retaining them - a method developed early in life, of making sense of ones environment.

These Rhythm Games have been perpetually refined by developers, allowing progression, divergence and innovation in the genre. They are fast becoming a way to distribute and purchase music, changing the way people consume. Research firm Interpret confirm[2] people who play music games buy 67% more CDs and are twice as likely to legally download a song. The game *'Rock Band'* has had more than 1 billion dollars in total sales, and over 50 million songs have been downloaded[3] in a climate where music sales are suffering elsewhere from the Internet pirate boom. *'Guitar Hero Aerosmith'* has generated for money for the band than any one of their albums. Harmonix has recently released *'Rock Band Beatles',* and considering the Beatles band has sold 1 Billion records worldwide, it represents a natural tie-in for both parties. The down side to this is breakdown of the previous overall thematic relationships between album tracks -

when fusing music to games often the stand out 'Single' tracks are solely considered, so the contextual build and release that makes an album's cohesive structure effective is lost.

Considering the near future, Sony and Microsoft are following Nintendo's *Wii* lead, and developing their own Motion Capture software that utilizes sensors and cameras, that will capture player input via kinesthetic motion in space in real-time, potentially giving greater degrees of presence in games. Digital Avatars may be designed as literal extensions of the Self, offering embodiment modes of player-game engagement not yet seen in the consumer home market. It represents a shift from the standard controller input method, to a higher channeling of the organic analogue body into the responsive mechanical, digital device. The Microsoft *Natal* device in particular has an infra-red sensor that can make wireframes from the data mined from the players, offering many new potential ways for designers to consider player interaction via machine recognition - the camera recognizes different faces and takes feedback commands. It can be seen as a method for broadening audience demographics and breaking down perceived barriers, as for many a handheld controller keeps people from playing games. This remediation of personal body expressions through a constructed avatar allows interaction with the game world at a level of suturing that has only been experimented with few methods before. These include the *Virtual Reality* costumes of the 1990's, which required the wearing of helmets and gloves - breaking the immersion and raising the level of suspension of disbelief required to be immersed. Wireless interface devices aid the generation of spatial orientations and reduce the kinesthetic difference players are aware of, between the Real world and the Game world. The Body is an intuitive control device, and the act of controlling a Body implies physical activity; releasing endorphins as well as the adrenaline usually associated with Video Games. Releases such as *'Wii Fit'* capitalize on allowing body exercise whist drawing users attention away from self-reflecting on their activity, which in another environment like a Gymnasium may be considered arduous.

As shall be discussed, entering a Playing a Game and Dancing to Music are similar activities in a few respects - generating in participants communality, shared senses of meaning, personal validation, entertainment and even healing. It could be argued a shared sense of the ethereal, ineffable and absurdity of life is critical to

happiness with no feelings of being alone. Both Playing Games and Dancing to Music are activities that are also binary opposites of each other in many more respects, which when overlapped at varying degrees allow interesting notions to be posited on the subjects of Agency and Flow – this is the focus of Chapter 3.

Modern Rhythm Video Games are often multiplayer and capitalize on amplified generations, creating an economy of fun. Players feel they can identity with the desirable skills of playing music as opposed to shooting even though their interaction only accounts as miming. Even though real music is not played, a machine is still used as an instrument to test a sense of rhythm and response. Purnell (1972)[4] uses the concept of 'Epideictic Rhetoric' to analyze crowd psychology, and many parallel relations can be drawn between the Active (Players) and Inactive (Audience) involved in the communal living-room Rhythm Video Game. Epideictic rhetoric refers to an Aristolean notion about praise or blame heaped from an audience, and players enjoy the elevated status an instrument brings to a party when they play. Rhythm Games are not as limiting audience demographics as the violence in most games, and the tactile link of a Guitar or Drums between player and machine lowers the levels of fantasy and the suspension of disbelief required to enter the magic circle of the game. Obvious appeal also stems from any popular song music, where players bring source familiarity to the game. Newman[5] (2004:141) notes "videogame interactivity is a powerful experience precisely because it is so 'bodily'" and this is only multiplied when embodied rhythmic interaction is occurring. Here players are literally their own "equipment for play… (their own) vehicle(s) through which (they) gain access to the gameworld".

Chapter TWO – Simon Says Respond

The current Rhythm Games available on the market can be roughly divided into four categories for further dissection depending on what the player is asked to do.

      The first to be deconstructed is the type of games where players are judged on Digital Rhythm Responses to the Call from the machine. Games in this category include *'Parappa The Rappa', 'Um Jammer Lammy', 'Space Channel 5', 'Vib Ribbon'* and *'Amplitude'*. These are literal remediations of the 'Simon Says' template, where success in Response allows progression through the game. A Call relates to a chain of buttons the player is to push, and rhythmic input of these chains equates to success - it is a performance as much as a play experience. The mechanism allows constant objective feedback judgment on whether performance by a player is successful or not, and there is the satisfaction of performing like a perfect computer if successful, in its simplest dualistic form. As Hunt[6] (2002: 200) suggests in relation to Beat-Em-Ups, the key to this mechanism is its "*affectivity*.... the capacity of games to act directly on the body... Most games vary their pace and pleasures, but the Beat-Em-Up (and the dance game) offers relentless excitation, constant gratification or its opposite, abject defeat and humiliation".

Each game still has its own Unique Selling Points. *'Vib Ribbon'* is that it is an interactive music visualiser, where the game is loaded into the Playstation RAM, allowing players to input their own CDs to perform through as the console suggests buttons to push that correspond to the song in question. By allowing this it fosters player attachment to their music collection, creating a personal experience. '*Amplitude'* allows the building a musical tapestry, from component elements that play automatically, and it is up to the player to switch them on by performing the correct chain of input command. *'Parappa The Rappa', 'Um Jammer Lammy'* and *'Space Channel 5'*, are all interesting because the diagesis changes depending on how a player performs; doing badly drains the colours and characters become agitated, and the music itself becomes lackluster. The actual mechanism of keeping ahead of the descending has been around since '*Tetris*' or '*Klax*', but the added dimension of musical interaction adds a new spin. All of these games allow the digital on/off rhythmic interaction with machines through the pushing of buttons - when the possibilities for added tactile and haptic controls were introduced so were new ways of interfacing.

Games in this next category correspond again to players Responding to digital rhythm but now with these aforementioned tactile and haptic controls. Games in this category include *'Guitar Hero', 'Rock Band', 'Dance Dance Revolution'* and the Apple iPhone transferred *'Tap Tap Revolution'*. Chains of Calls are again issued from the machine, but the method by which players Respond is different to the previous category through player input method. *'Guitar Hero'* and *'Rock Band'* use haptic devices which the players wield as their on-screen counterparts do. *'Dance Dance Revolution'* is operated by players pressing pressure-sesnitive panels with their feet, and *'Tap Tap Revolution'* is the same concept of descending rhythmic Call patterns but players answer with the added tactility of the iPhone's touch-screen technology. A player can engage in music and avoid the learning of how to play an actual instrument by using the machine as a method of bypassing how inital song creation. Matsurra[7] (Ashcraft, 2008a: 56), the creator of 'Parappa the Rapper', suggests "The fact that there are people watching makes these arcade rhythm games similar to an actual musical performance... plus players don't need an understanding of music or arrangement".

Multiplayer co-operative versions of these games are social experiences, and having music players are already familiar with creates a gliding sense of familiar fun amongst friends. Playing together in a band reinforces positive social interactions and one of the key reasons behind the success of '*Guitar Hero'* and *'Rock Band'* is the affordance the games allow for synchronization amongst friends. Co-operating in tune and on time with other people may be viewed as some as seemingly less futile and unrewarding at comparatively time-wasting 'Hardcore' games. The communal moments of flowing emergence are similar to Jung's theory[8] of 'Synchronicity' where events occur together in a meaningful manner. Players use the machine to bind together an autonomous band unit and when performing flawlessly, this synchronization comes to define the experience.

These games allow different behaviours based on whether players are collaborating or competing. By allowing such a smooth identity transition into their on-screen avatars, 'Rock Band' and 'Guitar Hero' have capitalized on performance psychology, where players look admirable when executing complicated chains of Responses as a performance to an audience. Even though the engager is merely replaying prearranged samples that allows no freedom of self expression within the diagesis, the attraction of the game comes from other people observing, playing with or against. In an interview[9] (Ashcraft, 2008b: 109), Matsurra, described how his initial inspiration for '*Parappa the Rapper'* came from sampling vocal syllables on a keyboard and playing them back. "I think that having this freeform style of music definitely helped to give *PaRappa* a certain unique tonality". It is ironic then, that at the birth of the modern day incarnation of the genre that the unique Labyrinthine characteristics of language syllables was being considered, when compared to the linear chain response nature of these modern games.

The next category that became apparent was those that judged the player on both or either Analogue or Digital Rhythm. Games in this category include *'Gitaroo Man', 'Rhythm Heaven'* or *'Elite Beat Agents'*. Differentiation occurs here based on their haptic input methods.

'Gitaroo Man' features the same Digital input as mentioned before, but during sections that ask the players to perform an electric guitar, the game turns the centre of the screen into the perpendicularly bisecting point of a Harmonic Oscillator. The player is to use the Analogue Stick to trace the Sine wave as it wraps and curls around the centre point to Respond and play the lead characters instrument. It represents a graphically tactile and literal method of playing musical notes via this tracing method. Due to its analogue nature, as long as the difficulty is not set too high, this input method affords a greater degree of kinesthetic creativity as the dance of the player input method is not completely choreographed in a digital on/off format, yet still allows enough structure for rhythmic judgment from the computer.

'Rhythm Heaven' and 'Elite Beat Agents' are two games that make the most of the Nintendo DS's haptic touch screen display where players answer the Calls of the game via analogue rhythmic sliding and flicking, or digital tapping and holding of melodic signifiers. This combination of approaches are combined with different elements in the diagesis to keep interaction entertaining. Due to the nature of analogue interaction, often players must focus more on finding sounds or melodies to listen for, rather than the overarching rhythm that is required to interact with in the digital equivalent.
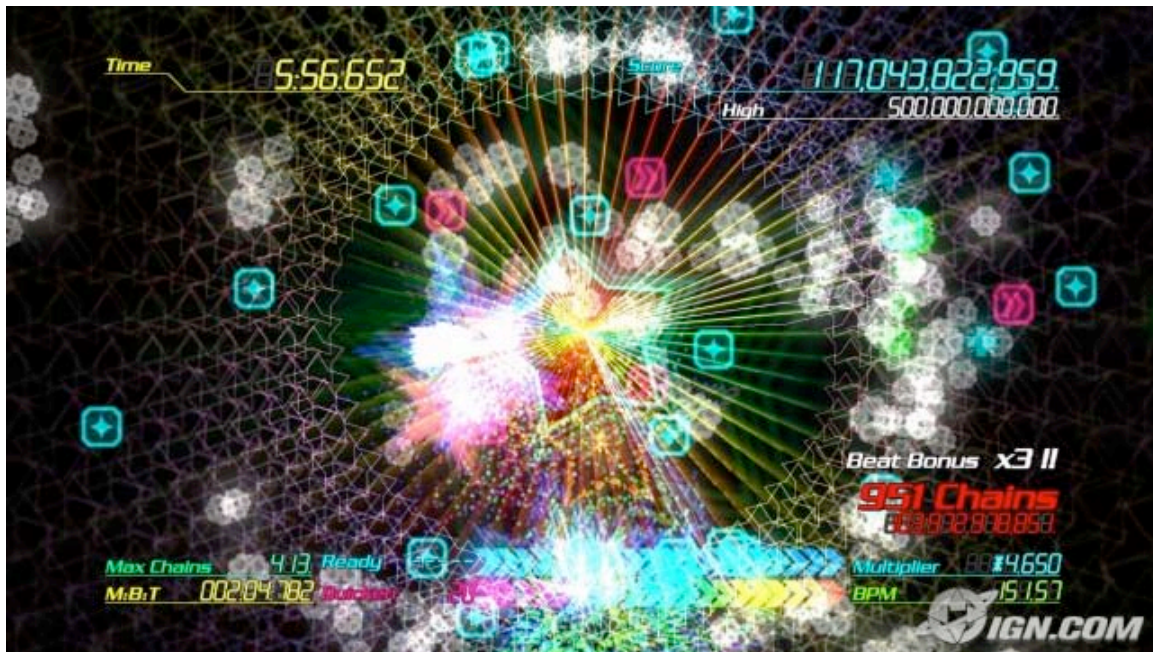
The final category that became apparent was the Hybrid Rhythm game, which includes *'Rez', 'Every Extra Extend'*. These games are unique as the musical elements are not simply triggered in time to a background beat, where players are engaged in the equivalent of monotonously pushing buttons. Rather, these games use component element sounds to mix in with the music as a method building a rich tapestry, via layering and looping of samples and beats to create unique experiences. In many respects, the music in these games could be analyzed as dancing to the player as much as the player dances to it through triggering interaction. In *'Every Extra Extend'*, the music loops build with the players' performance, and as long as a player does well there is a continuously rising feedback loop of crescendo-ing vocals and dual-guitar notes ring in the players ears.

'Rez' offers an immersive environment where enemies and shooting are component sound percussion, and extra body feedback via vibrating controllers that pulse to every beat. Similar to 'Every Extra Extend', the sound agents in the game are elements in the visual diagesis that when triggered emit their sounds. Interaction is less linear than the three categories described above, where incidental, strict digital timing is less important - hence an emphasis on freedom of expression through vast potential variation. Even so, gameplay is still constrained to a single screen in *'Every Extra Extend'* or the on-rails shooting action of *'Rez'* to allow mesmerizing immersion.

Various amateur designers are taking the Rhythm action template and applying it in different, innovative ways. 'The Dare To Be Digital' project '*Ragnarawk*!'[10] (Voodoo Boogy) is described as *'Guitar Hero* meets *Final Fantasy'*, where players explore an environment, equip abilities and battle with opponents using rhythmic combat based on the Call /Response template. Other games such as *'BeatShip*'[11] uses the *'Rock Band'* Drumkit to drive a Spacecraft, where the pedal drives the speed of the game as players Respond to the patterned Calls. Therefore, the player controls the pace of their Call consumption and the game rewards players who go faster, both visually and with points. The 'National Invent-A-Game Challenge' was recently won by a designer for a game called *'Rhythm*'[12], a music based platform game. Switching between different genres at the disposal of the player is to be strategically used to advance, which changes the landscape according the genre's characteristics.

Future considerations for designers would require a close inspection of the literal positioning of players. If players are always facing a screen and absorbing Calls to Respond to, then the remainder of their bodies are only free to dance in a limited way. Latency across the Man/Machine Interface flowing from both directions also represents one of the greatest technical challenge to overcome for designers, especially considering the precise nature of the Rhythm Game. Machine Latency is the small gap of time between a players input and the machine triggering a sample, which by definition will always be just slightly after a beat, because of Player Latency - the amount of cognitive and kinetic time taken to deconstruct and Respond to a Call. Time is required to act, rather than straightforward Musical Composition where there is no time-space between a

Call and Response; in the case of the Musician playing an instrument it is all creative reflection.

Chapter Three – Play and Dance as Parallel Dichotomy

As discussed, the 'Simon Says' Rhythm Game has at its core a very basic machine Call and player Response relationship, resulting in a basic gameplay mechanism which appeal lies in its application. Evolving this rhythmic cyborg relationship requires analyzing the striking binary opposition of interactivity with Games and Music, as Play and Dance respectively.

That is not to suggest there are not similarities. As Jenkins suggests (2004:672)[13] ""Not all games tell stories. Games may be an abstract, expressive, and experiential form, closer to music or modern dance than to cinema. Some ballets (like The Nutcracker for example) tell stories, but storytelling isn't an intrinsic or defining feature of dance". Both play and dance evolve to survive when people are young, as methods of safely experimenting, gauging and engaging with the novel and original world around them. Emotional development, feeling and expressive meanings are generated through play and dance. As rhythm is inherent in all things, tapping along to one is fun as it gives a sense of scope and scale to a passage of time. This tapping, or rather triggering is the Play element to the rhythmic Dancing inherently pleasurable in the time calibration - a perpendicular meeting in the middle of a moment.

Video Games are defined by rules in which players attempt to reach goals in cybernetic systems. Dance is often entered into as a goal-less pursuit, but the conducive element (against oneself to get fitter or learn choreographic movements, or against others in dance-off contests) is viable in the game format. There is a fine line between dancing and play as methods of controlling confrontation and conflict resolution through dramatic competitive challenge. For example, New York is well known for their Dance-off contests and most Sports are centered around an 'Attack' and a 'Defense', linguistic terms for conflict. When Dance becomes Game like, and Play becomes Music like is where experiences are often at their most pleasurable - where Agency and Flow are abundant.

The following graphs represent graphic representations of player and dancer experiences through Game and Music. The white areas represent Freedom, and the black areas

represent Rules. The axis of the graphs represent Time on the X axis, and player / dancer Concentration on the Y. Their purpose is to give impressions of what happens when one is overlapped at different intervals with the other - where what defines a Game and what defines Music becomes indistinct; towards new ways of looking at the Rhythm Game.

GAMES
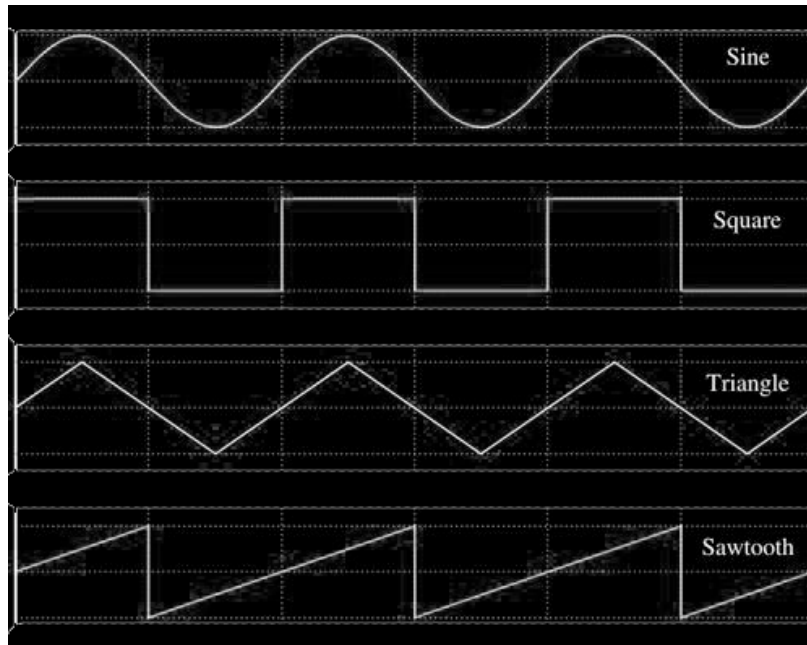
Here, Games are a celebration of Rules in the face of Freedom - Free Players are in the middle, surrounded by the Machine Rules (the Game) which are shaping their interactive experience.

MUSIC
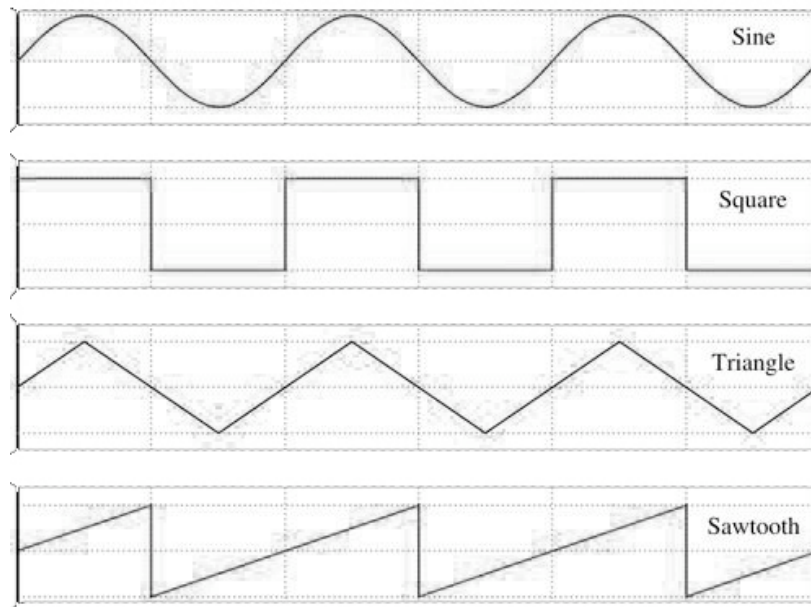
Here, Music is a celebration of Freedom in the face of Rules - Bound Players are in the middle, surrounded by the Machine Freedom (the Music) which is shaping their interactive experience.

The 'Simon Says' mechanic relies on how much Agency the player is given; the interval in both Game space and Music time with which players have to Respond to a Call. In a game that allowed the *reverse* to occur as well, then questions are raised as to who is controlling who across the man/machine interface. Such a game is certainly feasible in the future, considering the amount of input data that can be mined and manipulated by the output machine, and a moving player. The distinctiveness between the roles of Dancer and Choreographer is blurred; where player performs for machine and vice-versa. Theoretically such an oscillating state would result in a sublime pleasure Flow and Agency experience, where the component level interactions between man and machine are occurring on such an atomic level that players feel they are Authoring and being Authored simultaneously. To help articulate this point, Murray (1997:128)[14] describes Agency as "when things are going right on the computer, **we can be both the dancer and the caller of the dance. "**

Carr (1997:62) builds upon Csikszentmihalyi's[15] theory of Flow, with "The flow state is possible when an activity involves escalating yet a manageable challenges, options, decisions, risk, feedback and achievable goals. It is an intensely pleasurable, optimum state, incorporating focus, euphoria and high levels of motivation..." articulated further by Douglas and Hargadon[16] (2006:6) 'Since flow involves extending our skills to cope with challenges, a sense that we are performing both well and effortlessly, it hovers on the continuum between immersion and engagement, drawing on the characteristics of both simultaneously'. An Interactive experience of this manner would oscillate engagers between Dancers and Players constantly, **in an Asynchrous Feedback Loop.**

This is further illustrated through the concepts of the Maze, Rhizome, and Labyrinth. Mazes are described as a strictly linear, " with every branch deeply explorable" -Murray (1997:132). The description of the Rhizome builds on the theory of Deleuze[17], who used "the rhizome root system as a model of connectivity in systems of ideas; critics have applied this notion to allusive text systems that are not linear like a book but boundary-less and with out closure" Murray (1997:132). In the middle, situated between both lies the theory of the Labyrinth which are "Stories that are goal driven enough to guide navigation but open-ended enough to allow free exploration and that display a satisfying dramatic structure no matter how the interactor chooses to traverse

the space" -Murray (1997:135). The linear nature of the Maze is akin to the flow of time, as the ever-connected Rhizome is akin to a Hypertext. Similarly in the middle, situated between both is what the controlled chance of the Labyrinth is allowed, charged by a delicate balance of fluid Agency through program at the atomic algorithmic level. Carr (1997:62) continues[18] with "The labyrinth then incorporates the best aspects of the maze, with the freedom of the rhizome. It follows that different versions of the labyrinth might be more maze-like, or more rhizomic and that these qualities could be incorporated in varying degrees, in order to generate different experiences for their users". An experience where the liminal space between man and machine, as they oscillate quickly between authorship roles via Asynchrous Feedback Loop, if designed correctly would be a truly Labyrinthine balance.

Dance/play qualities that correlate as Maze like are Linear Choreography, Repetition, Memorized Patterns, Locations, Scripts, Guides and Corresponding Spaces. These mostly characterize the current generation of Rhythm Game, framing their players as submissive Participant and Audience, forever Responding to the machine Calls. That's not to describe such experiences in a negative light - satisfaction occurs from practice, familiarity, repetition and mimicry. Here players vary their input until they gain Mastery of the Game.

On the other hand, dance/play qualities that correlate to the Rhizomic are Authorship and Improvisation (invent, compose, recite without preparation), Creation and Communication, Customization + Personalization. These are all characteristics of the dominant Artist and Performer, who in relation to Rhythm Games would issue the Calls for the machine to Respond to. Such a creation would allow too much uncontrolled power in a machine, as truly emergent non-linear hypertext would suggest a machine varying its input until it gained Mastery of the Human, potentially. This is the same as the infinite 'Heat Bath' scenario in Quantum Mechanics where Decoherence occurs – interaction with a user causing an uncontrolled, perpetual 'leaking' due to the undisturbed evolution of coherences allowed through the algorithmic programme.

In the middle are Labyrinthine qualities of Improvisation, where repetitious themes and variation are balanced, Subjective Interpretation via a cue rather than right or wrong, and the linguistic term 'Catachresis' where positive evolution occurs through

transgressive misapplication - new expressive meaning is fostered. The Labyrinth is situated where Maze-like pattern and repetition are balanced with the inherent need for structure and change. Poetry (kinesthetic or linguistic) is labyrinthine; it is a code as having license to improvise as long as it is in the boundary of being resonate for an audience.

With regards to Authorship, which Murray (1997:152) elaborates with "One of the key questions that the practice of narrative agency evokes is, to what degree are we authors of the work we are experiencing?... there is a distinction between playing a creative role within an authored environment and having authorship of the environment itself... Interactors can only act within the possibilities that have been established by the writing and programming...". The requirement for component level design is what will be explored next chapter.

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Appendix (Notes): Chapter 4 - A Matter of Meeting Music in the Middle

Power of Component Element

Dynamic Rhythm Harmony

Old feedback loop seem fractured

COMPUTER COMPUTER COMPUTER

CALL   RESPONSE CALL   RESPONSE CALL   RESPONSE

PLAYER   PLAYER   PLAYER

ad infinitum

COMPUTER

CALL

RESPONSE

RESPONSE

PLAYER
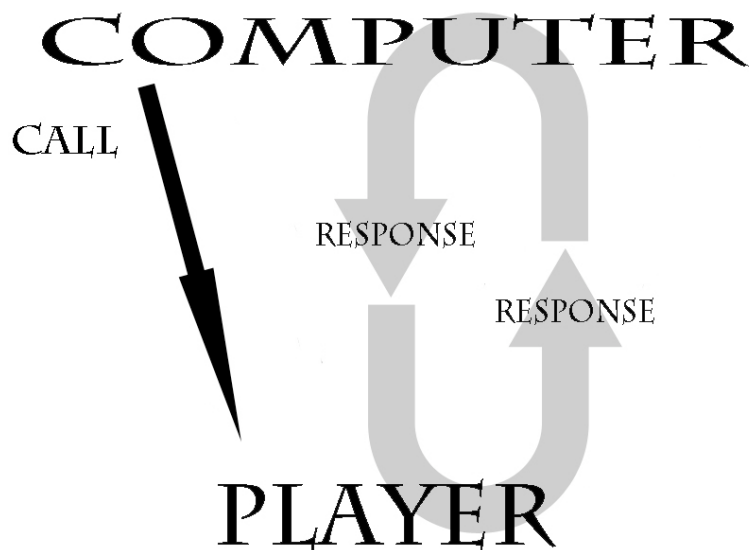
Man/Machine as Polyrhythmic ensemble.

Lacan's Mirror Stage = We are merely caretakers for our own bodies; with what we afford other people to see in us as our true worth. The same is true for any kind of Instrument that is fashioned that is used to create art, including otherwise solless Musical Instruments, whether Classical or Electronic. What if a machine could afford the same number of rhymtic changes as the human brain could decipher?

Meeting in the middle is how Musical Dancers interact, as Game Players do.

Kinetics = vibrations anyway.
Technical - Most rhythm games (especially Rock Band etc) as a simple list that player must press. One way - call from computer, response from player. Needs more call from player and response from computer, at the same time...
Need DIAGRAM, of two sides, meeting in middle then computers arrow gewtting smaller over level progression.
As players rhythmically interact with a machine, so it occurs vice-versa. 'Asynchronous Feedback Loop's from both side.
Usually only feedback is to eyes/ears and brain.

http://pastebin.com/f6a4bb4b0
Scribblenauts as good examle of Emergent Gameplay with its lexicon of summon-able interactive nouns at 22,804, the concrete number of potential interactions programmed is as yet, unknown) DJ at the micro-level with 'intelligent' (the aesthetic of the filter must be evaluated subjectively, by an otherwise objective machine) audio filters (Semi-deterritorializtion - smaller rhtyhmic blocks as non-structure, within the larger, overarching percussive structure - like Amon Tobin's work - Foley Room - perhaps why he got chosen to do Chaos Theory and Infamous - music suits game environment well...), give illusion of intuition as man and machine dance with each other.
http://en.wikipedia.org/wiki/Foley_Room
http://en.wikipedia.org/wiki/Chaos_Theory_-_Splinter_Cell_3_Soundtrack

Conducting/composing as emergent authorship. Dance as natural extension of that - unique experiences for every player, every play through via vast amounts of writing in the cybernetic system via architect, for concievable outcomes.
Emergent gameplay as Composition (writing music) as Agency as Illusion (ultimately)... atoms, particles and component elements behave in probalistic scientific behaviour patterns, but our mind is made up of these elements too... how can free will exist...Matrix style reality as Cybernetic System.

Flow "enters into a relationship with another flow, such that the first defines a content and the second, an expression. The deterritorialized flows of content and expression are in a state of conjunction or reciprocal precondition that constitutes figures as the ultimate units of both content and expression" (Deleuze and Guattari 1883, 241, *Anti-Oedipus: Capitalism and Schizophrenia.* Minneapolis/London: Univeristy of Minnesota Press)."

Towards greater understanding of the rhythmic interaction between man and machine, the Rhythm action game represents the most direct method to correlate and explore this perpetual, tentative, liminal interaction. Man / Machine Oscillation.
Man / Machine critique on similarities, organic heartbeats also being digital pulses, dance as running away - being like a computer mechanical rhythm. Oscillation.
Man + Machine as constantly harmoniously resonating (whether in music production, from man to machine, or played out from machine to man - feedback loop), pressed against each other as interface - the murmuring membranes - a melding with the mechanical
Each pulses in time to the rhythms they emit
Blur the line between audience and author. your body plays the music, as the music plays your body. Reader / writer (Wreader?)
traditional boundaries between 'audiences' and 'producers' has collapsed.

Theoretically a contravening of many different themes - the liminal nature of when the digital become the analogue and vice-versa, Oscillations between reading text / performing text from both man and machine. Human players ticking by with the rhymic sense of machines, while the computer is programmed to do its best at thrashing around chaotically, mimicking the analogue mimetic world. Dancing in tandem - computer role moves from judge to partner. Both player and computer as Metronome, rhymtically interacting as underlying structure and primary characteristic. an entrancing interface for both man and machine.
Would allow expressive poetics that centres from the dancing body.
The user must listen to the music, and the music listen to the user - constantly updating each other.
Computer no longer as slave...
Would work via remote high resolution sound sample matrix database. Size of it would require remote connection.

???
BeautIful movements should = beautiful sounds as up until now only the reverse has been explored (humans dancing to instrument/machine made music), and Interactive Media is the only capable medium of exploring other potentials (instrument/machine made music dancing to humans).
"Live performance as a situation that enables a collective and reflexive awareness to develop between audience and performers.... new kinds of presences to become perceptible, presences that exceed the literal meaning of the acts that performatively create them"
???

Power of Component Element - Structure, need to keep flowewing to be absorbing game.
How we measure media through contrast etc.
No contrast is akin to Pleroma.... http://en.wikipedia.org/wiki/Pleroma
Inherent intensity in contrast. Whether visual or aural object, intensity of background noise is important for distinguishing.

Combination and effect...but would require a delicate balance in design to work (considering how meticulously pieced together linear music is anyway)

NEWMAN (2004) 'VIDEOGAMES' – Routledge, London and New York
Chapter 6 - Narrative and Play, Audiences and Players
<u>"Game Time"</u> -
"For Juul, it is quite simply impossible to have narration and interactivity at the same time: 'The game constructs the story time as synchronous with narrative time and reading/viewing time: the story is now. Now, not just in the sense that the viewer witnesses the events now, but in the sense that the events are happening now, and that what comes next is not yet determined (Juuls 2001, 'Games telling stories? A brief note on games and narratives' *Game Studies (1)* available at http://www.cmc.uib.no/gamestudies.org/0101/juul-gts).' According to this argument, shifts between narrated material and first-hand gameplay necessitate uneasy adjustments of the temporal distance between player and action. videogame play is characterized by the player experiencing action in the gameworld at first hand in the immediate real-time of 'now'" -103 hence sound matrix tapestry would work as both interactive, and narrative

Two way street....choice...different body experience
Man, Machine as the same, The Self and Other as constantly orbitting mirrored dichotomy in both cases of machine and player
Musical dance has always involved technology, whether in front of music from primitive instrument to music from massive speakers.
Man has always surrounded himself with machines. Player / avatar - embodied symbiosis via haptic manipulation of the game controls.
Cyborg kinesthesia.
Indistinct Space between man and machine interface, the nexus of digital performance, body, space and technology.

Sharing of call (trigger) / response (consequence) ...autonomous
Body would be used as instrument to call, and antennae to respond - simultaneously as game does..
Questions of decoding... encoding...Call / Response as Signifier / Signified...
Machine as puppeter up until now - demand/call, reciprocate/response structure.
Submissive and dominant. Tension between player dancer + machine music.... I aim to explore a reversal? Pass Turing Test? Current rhythm games like osmosis, worng model. Needs oscillation across hemispheres like tennis. Should depend on who is on the side of the ffedback, not just the machine.
(Offer) to (Demand), (Event and Mood Enticement (Plea)) to (Urgent Command)
Rhythm Games are a call/repsonse relationship ad infinitum, like tennis against a ball machine - there is no feedback just the next call. The Universe is the initial prime mover, then a constant reverb bounce of responses.
'Reciprocal activity'

http://www.lcc.gatech.edu/~gromala/art.htm
DIANE GROMALA on BIOMORPHIC TYPOGRAPHY - ""when the body becomes enmeshed experientially"... a new form of writing and reading that I term BioMorphic Typography. The user is hooked up to a biofeedback device that changes the visual character of the font she is writing with in real time. So for example, the font "throbs" as the user's heart beats and grows tendrils and spikes, as the user becomes "excitable"... the users are directly involved in a feedback loop and in this way, the relation between text and sensual response is both made evident, and is problematized as users are "called back" to an awareness of their body. An interesting component is the role of attention, as it continually seems to shift, oscillate and buzz among reading the text as it is overtly meant to be read, reading the more covert, visual aspect of the text, and reading aspects of one's own body.

When applied to Rhythm Games...
Cyborg kinesthesia / synthesia - Audio visual tapestries (sound as object) that are Ethereal in quality that is once material and immaterial.

???
If player experience is the unit by which how interactive art is measured, the medium needs to carry a constantly resonating signal where players construct their own stories within the boudaries of the cybernetic system it is encoded.
Agency and the power of the component element in shaping mental (emotional music) and physical (via kinesthetic) experiences.
"Yea it's a touch cookie, cuz nothing is non-linear
Rather, the sense of agency the player is given in the amount of illusory freedom the game gives them"
but would require a delicate balance in design to work (considering how meticulously pieced together linear music is anyway)
"Component element ie note = entirely subjective, the more that is built ie melody makes it more objective by nature... so difference between game and KORG SYNTHESISER for instance, is the creativity a player can embellish, of course beauty of game is in samples... but how much creativity can be danced to? Surely a sample will always be call / response.... unless not literal movement, rather rhythm of body - would allow for freedom witih rule boundary.

Component element as subject to subjective personal cultural reflection - Kinesics as measure of body motion. Choreometrics as definitions of different movement performances.

As dance is an evolving process (Diachronic) should it be judged in slices of time? (Synchronic)? Translation issues. What is one persons dance is another persons dance (genre is one solution, as it makes it objectively possible to follow what is epxected from judgement...)

The dream of a universally adored absolute artwork is objective, yet value and judgment is subjective... can a robot judge better than a human? Ethical questions about absolute moral law, empathy and compassion. Dance is inherently hermeneutically expressive and open to the interpretive - should it ever be judged?

POSITIVES - RHYTHMICALLY TRIGGERED FEEDBACK BETWEEN MAN AND MACHINE - SELF AND OTHER, MIND AND BODY INTO SATISFYING WHOLES
Theoretically, Method of overcoming Cartesian Anxiety.

"Cartesian anxiety refers to the notion that, ever since René Descartes promulgated his highly influential form of body-mind dualism, Western civilization has suffered from a longing for ontological certainty, or feeling that scientific methods, and especially the study of the world as a thing separate from ourselves, should be able to lead us to a firm and unchanging knowledge of ourselves and the world around us. The term is named after Descartes because of his well-known emphasis on "mind" as different from "body", "self" as different from "other".

Richard J. Bernstein is recognized as having coined the term in his 1983 book Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis."

 mind/body unity, celebrating Ontological certainty, mind/body as same - self/other as same... defeating Cartesian Anxiety

delicate balance of agency - visual diagesis triggers synched to choreographed patterns to be performed by player which in turn trigers musical elements... room for error decreases as game goes on. Bridging parallels between music and visual arts will be difficult process....sonic sculpture. Display repeated patterns of movement - sychned to rhymic patterns found in musical loops/samples. Ear + Eye Coordination. Matching liminal flow of play with dance to create a sublime experience.

open up circuits of energy flowing between bodies and incoming information,

Tension between players free dance and players being told what to do at all times. This balance is key - opposite sides to each other (Human Vs Machine),

As the player moves the computer enemy so the enemy moves the player, internal and external stimuli becoming one in each of their respective consciousness. The user must listen to the music, and the music listen to the user - constantly updating each other. Ideally, allow players to touch the humming binary digital vibrations behind reality's seductive analogue veil.

Nexus -

Friedrich Nietzsche

"If you gaze long into an abyss, the abyss will gaze back into you." USE WITH REGARDS TO THE USE OF VIDEOGAMES BUT IN A POSITIVE LIGHT; HOW KINESTHETIC DEVELOPMENTS ALLOW A COMPLETE EMPATHETIC MIRROR (Lacan??) The dichotomy of man and machine equal as abyss staring within each other.

Chapter 5 - Play in Particular: The Brink of Borderline Balance

Has to be a game!!

NEWMAN (2004) 'VIDEOGAMES' – Routledge, London and New York

Chapter 7 - Videogames, Space and Cyberspace

"Space and gameplay" -

"Importantly, these are *game*worlds with specific objectives and most importantly rules" - 123

(On Robotron) "It's just the confinement. You are stuck in that room. You can't run down the hallway. You can't go anywhere else. You're just totally focused. A lot of times, the games are about limitations. Not only what you can do but what you can't do. Confing your world and focusing someone in that reality is important (Eugene Jarvis in Herz 1997: 79, *Joystick Nation: How Videogames Gobbled Our Money, won Our Hearts and Rewired Our Minds* London: Abacus)" -124

"...Sound designers can utilize potential audio cues to enhance the sense of spatial coherence and integrity of gameworlds. Positional audio extends the player's spatial awareness and experience beyond the visual.... Tactility, too is employed by designers to heighten the player's spatial experience.... The ability to *feel*...broadens the player's sensory experience of - and, it can be argued their sense of presence in - the gameworld. videogame spaces are experienced viscerally with the whole body. The exploration of videogame space is a kinesthetic pleasure. It is important therefore, to consider the ways in which players virtually exist within these spaces. The following chapter presents a discussion of the complex composition of the videogame character and multifaceted relationships between players and their on-screen avatars" -125

Via a high definition sound matrix it is possible to create 'non-linear' music to match the action of the visual diagesis. This is through many samples that maybe potentially mixed, and certain filters which may be applied over the top when certain attacks happen are cast by the player or enemy. Compositions must never get too densely layered so use eclectic, changing special effects.
Effects should slide over each other, but still be Harmonious...non-linear music that ventures beyond background dissonance will tend to be seen as non-commercial... so i'll have to be careful.
 I think the relationship needs to work in reverse as well - but it might require a rewire as to how as a species we appreciate Music!!!!
Boulez + Lutos_awski -

http://en.wikipedia.org/wiki/Pierre_Boulez
http://en.wikipedia.org/wiki/Symphony_No._3_(Lutos_awski)

...aleatoric music...
http://en.wikipedia.org/wiki/Aleatory
http://en.wikipedia.org/wiki/Mobile_form

Music in Round form, as having a harmonious structure than can potentially last indefinately. Only problem is each "Many different chord progressions are theoretically possible in a round, but it can be very challenging to keep each part sounding different and yet still melodic as they trace out the appropriate chords."

There's a guy who has written some non-linear music, it consists of samples that played any way evoke the mood of the piece....
Fine line between "It's a movement of sound and energy. You don't listen to it like music" where the typically contravening converge of digital vs analgoue etc.
 Building blocks within entire composition...joining individual ideas into a physical flow, and a sequence of scenes whose joint purpose is to move the story into a dramatic direction...Amon Tobin
Environment Audio visual tapestries (sound as object) that are Ethereal in quality that is once material and immaterial, always grounded as almost balance. So Physical landscapes with Mental elements can be summoned (physical always takes prioirty as that is the interrface method) - Otherwise simply an interactive abstract visualiser, as endless and limited to entertainment as ambient trance.

NEGATIVEs - Natural Imbalance in constant feedback loop
 -(yet player still needs to win something, so a goal is still needed. A dancer would still need to feel as if they were progressing/evolving to be a satisfactory experience.
Like pong, but progressive results always tuned to human ears and mind.
Need a goal - player would always need to dominate the machine, as with all games need a clear win or lose situation designed. Players always need to be judged or measured for their dance, and they don't want to measure the computers dance. Imbalance in constant feedback loop. Gives forward driving structure, progression.
In a game, the borderline balance will always be on the brink, so the player feels progression.
Would ned a quantifiable outcome if it were to be game and not a toy/utility… can't be an open ended Caillois 'Open And Expressive Game' such as Sim City… these have emergent goals but no single overriding outcome, which is what the popular definition of music and its structure needs to work.

???
Consider audience - Imbalance because of music always needing to be read as Harmonious to the player (human side). Presumably, Harmnoius music to the Computer side is static glitch music. Also for human consumption, always needs to plow forward to a satisfying contrast conclusion, can't be stuck in a loop (presumably what a Computer

would like).

Pragmatically, Can never have completely balanced agency game because of Hands On Horror effect of computer programme 'world' always in way...
 "player conducts/authors music with dance (music always needs controls player, otherwise no goal.. need one for a game, otherwise the player is merely a composer - like Wii Music), music goes wonky - player 'glitches' (never possible due to HANDS ON HORROR style reliance on always having a guiding hand in program, computer always needs to be overarching choreographer)"....cybernetic systems as always inherently closed, due to limitations of Archietect.

Environment Audio visual tapestries (sound as object) that are Ethereal in quality that is once material and immaterial, always grounded as almost balance. So Physical landscapes with Mental elements can be summoned (physical always takes prioirty as that is the interrface method) - Otherwise simply an interactive abstract visualiser, as endless and limited to entertainment as ambient trance.
 Free dance = player conducts/authors music with dance (music always needs controls player, otherwise no goal.. need one for a game, otherwise the player is merely a composer - like Wii Music), music goes wonky - player 'glitches' (never possible due to HANDS ON HORROR style reliance on always having a guiding hand in program, computer always needs to be overarching choreographer),
 ???

Highly theotrical solution for evolution - combining asynchrous feedback loop with inverse kinematic animation and component element level music sample remote data matrixes for sublime flow experience - hence defeating Cartesian Anxiety. Though it's more like an endless toy, or a utility than a game with no goal.

Commercial Appeal -
Dance as inherently 'non-linear', games as linear beating of competition. People go dancing for tactile sense of other bodies, not possible in living room connection?? Depends on Suspension of Disbeleif, strength of feedback. Local multiplayer games will solve this kind of. Does the purity of dancing need a model of conflict and competition to sell to the West?
 Indeed the pleasure of most music lies in its meticulous linear construction, designed to lead listeners on journeys.
Easy to fall into trap of mindless repetitive trance music that doesn't go anywhere.
Quantisation required so players make listenable music - so tuning schemes need implementing
Potential for experiment vs freedom of expression

http://nicolapallitt.wordpress.com/category/rhythm-action-games/
http://kotaku.com/5301071/jimmy-page-and-jack-white-arent-fond-of-music-games
Guitar Hero / Rock Band bubble will burst as suitable bands run out of music to loan, some bands don't want to get involved (OAsis and can't even be bothered with promotional Music Vids), and can be seen (Jack White) as a lazy method of being talented 'playing' music, takes out the process of instrument mastering and authoring music - "I don't understand the point of this. Yes the Beatles are good song writers but

they are not known for crazy drum solos and wicked guitars. How difficult could this possibly be to play? Personally I think the only reason they are doing this is because of the popularity of the songs, and not the appropriate music for a fun, exciting, music game. Won't most of the songs just be 5 chords and a 30 second solo if that?" Personifying music is problematic as music is a deply personal, powerfully subjective medium - some bands don't like to make music videos as it spoils the subjectivity. Music as subjective -

culture producing their own demonstrably different music theories and sounding good. Besides the frequencies of notes having to be spaced out in certain ratios, there's not much you can say is doing it wrong.

???

cyberspace connection (Rez, but not so abstract) and capture feelings of openess and freedom

Down side is this approach would require Mechanical Dance music by its repetitive nature for engagement between man and machine to murmur their membranes - and allows more rhizomic elements to occur. Acoustic Analogue Indie music may have repetitive chords, but by its very nature has different vibrational frequencies played with each note... makes for a different listening experience. More critical aclaim, less bodily kinesis occuring. More mental, less physcial. Music and images working together to offer an audience a heightened audiovisual experience - hypnotic effect, direct result from Techno music used; Trance, Psychedelic, Ambient, Drum And Bass... Different types of music makes different types of dance = different types of intangible spiritual ground to reflect on?

Realsitically, Juul-esque completely 'Open And Expressive' (SIms etc) Rhythm Game impossible with Western notions of linear media (books films, music all need a climatic resolution... Music especially only usually holds the imagination for a bout 5 minutes. So Rhizome qualities needed within firm maze structure.... Looped musical elements quickly lose appeal. Deleuze -" In order for music to free itself, it will have to pass over to the other side, there where territories tremble, where the structures collapse, where the ethoses get mixed up, where a powerful song of the earth is unleashed " http://www.focusdep.com/quotes/authors/Gilles/Deleuze

Conclusion: Dance of the Membrane Oscillation

"Wollheim, R (*Art and its Objects.* 1968, New York: Harper & Row) "The spectator will always understand more than the artist intended, and the artist will always have intended more than any single spectator understands"

Power of musical authenticity in its live performance – only until recently have we been

able to record and replay musical pieces – diminishing their auras. A game that had a different piece of music produced each play through would be much more akin to the live performances, that during the middle ages were the only way audiences experienced what power lies in what used to be an economy of orchestrated rarity – its value through synchronicity. Games like Guitar Hero can facilitate this feeling of synchronicity in its players through pattern input, but playing to this music is more akin to dancing, where players are free to be bound by rules. The opposite is true with real playing of music, which allows room for improvisation; where players are afforded their freedom through being rule-bound.

Music as inherently balanced– rhythm is repetition, and a composition may have no repeating elements. The music in the middle is a balance of the two extremes.

Oscillations will one day occur at the atomic algorithmic level, allowed by quantum computing.
Music as uplifting empowerment through resonant understanding
Much of Guitar Hero's appeal lies in its repletion, in both play and its song table (familiarity that players bring to the game already).
2 THINGS STUDIED
SOFTWARE
1. SPACE BETWEEN SOUND EFFECT AND MUSIC (*What's That Funny Sound?* Non Vidoegame Music like Amon Tobin works as well (Sound Effect as percussion), but usually music of this nature is built strongly around melody, but Sound Agents in games offer useful method of triggering to create the melodic, otherwise noise…the power of relaitviely objective musical melody as being subverted by component sound effect playability)
   SPACE BETWEEN REPETITION AND DIFFERENCE (balance, Labyrinthe etc)
Deleuze = comforting power of listening to music as inherently repetition. Why Guitar Hero users will always be dancers, not players. To make rhythm games truly playable would need to rewire how we consider music – stop with the comfort from repetition and find the thrill of the emergent play.
Deleuze = comforting power of listening to music as inherently repetition… Music is also narrative in structure; designed through contrasting elements to take listeners on journeys – why linear music suits rhythm games so well, as repeated plays and hence mastery of the game is similary a pleasurable experience to repeated listenings of music.
Yea games and music are a parallel dichotomy, as are their players and dancers
Things get intersting when you start asking who is the player and who is the dancer
I argued Guitar Hero doesn't allow play, only dance
And that real play would involve much more component authorship
It's all theoretical, cuz i'm talking about algorithms on the atomic level - you'd need a game that could make non-linear music
While not technically impossible
It's pretty improbable
PEOPLE WHO USE GUITAR HERO DO NOT PLAY THEIR INSTRUMENTS, INSTEAD THEY DANCE THEM
Labyrinthe as **The problem with videogame development up to this point is that the**

design emphasis is on the player exploring every remote, isolated avenue in each game. Future games should have a wider scope, allowing the player to still gain an exciting and satisfying experience even if large sections of the design are missed out; a greater emphasis on non-linear design beyond the sandbox. GTA IV is a good example, but future designs must be pushed further with a less importance of collect-em-up design where the developer holds the players hand in suggesting routes to explore and items to pick up. Replayability would be stressed naturally, and the game more rewarding and enriching.

HARDWARE
2.   SPACE BETWEEN MAN AND MACHINE (Read *Corporealised Pressure*)
Video Games have been bound by their Polygon counts up until now, resulting with flat planes and vertices - regardless of textures painted on top the result has always been lacking in resonant depth. Arguably, this affects on the subconscious level and is why an interpellated game player will never feel the same way as they would in reality, because of the difference in literal atomic level murmuring membranes. The tactile feedback will always be different in the virtual, so long as objects are created from anything less than a vibrating subatomic particle as is the case with reality – the dance of these particles and their interaction with a user is what creates the feeling of immersion in reality. This tuning is otherwise lost – of course this is very much like the plot to the film the *Matrix* where the human is merely corporeal battery. So perhaps it is a good thing that there will always be a difference in the level of immersion between reality and the virtual, so that players are familiar with their gameplay activities as trivial… that is until computers are powerful enough to generate playable spaces that do vibrate on the subatomic level.

http://www.npr.org/templates/story/story.php?storyId=89565567
How boring Rhythm Games have become (always have been) with their call/response mechanism, yet it will always hinge around this as long as games have choreographic sequences assigned to them. more freedom to really capture rhythm, by measuring the pace/place of their bodies.
Right now the players agency (response) is governed by the computers call. Need as close to meeting in the middle as possible to evolve - never be perfect due to nature of electronic media.
Rhythm Games need to become more about feedback, rather than just feedforward.
Reality / Synthetic membrane is the human / robot divide; if balanced and were allowed to think together (or atleast give the illusion through emergent programming) it would allow enhancement to emotional experiences from the player.
Theoretically, matching liminal flow of play with dance to create a sublime experience. Perfectly balanced, a 'plancer' would experience Agency that is "cacophonous yet tranquil, experimental yet familiar, foreign yet womb-like, spacious yet visceral, textured yet vaporous, awakening yet dreamlike, infinite yet over in the length of a sample or song". Very Deleuzian, post-structuralist - "Additionally, according to Deleuze and his concepts of difference, there is no identity, and in repetition, nothing is ever the same. Rather, there is only difference: copies are something new, everything is constantly changing, and reality is a becoming, not a being." -http://www.iep.utm.edu/d/deleuze.htm
A certain simultaneous understanding, supporting or etiquette on both sides of the interface would be needed for a truly 'magic' agency-charged game, a delicate

harmonious zone.

Pleasure of Amplifying mental spectacles that stem from kinesthetic movement (waves crashing from swinging an arm around). Decoration amplification.

"Satisfaction of being a player as an interdependent part, integrated as a living organism into a machine like function - performance of role is ranked and evaluated. Complex and pattern intermesh to constitute a smoothly running machine, an effectively functioning whole."

Time, urgency, logic, resolute - firm in purpose or belief; characterized by firmness and determination - touch the threshold.

While ultimately impossible, the illusion could be reached with the power of component level agency, allowing the liminal space between the murmuring interface membranes between man and machine to almost touch, in an oscillating dance as perpetual as the length of a game.

???

delicate balance of agency - visual diagesis triggers synched to potential choreographed patterns to be performed by player which in turn triggers musical elements... room for error decreases as game goes on. Bridging parallels between music and visual arts will be difficult process....sonic sculpture. Display repeated patterns of movement - sychned to rhymic patterns found in musical loops/samples. Ear + Eye Coordination.

As noted in the introduction - The way people consume music has changed.

"digital music eroded the arbitrary 45ish-minute barrier that once was dictated by vinyl's finite diameter. But while a single song will often do, there's a talent to building and a pleasure in experiencing a dozen songs weaved together into a 40 minutes that's richer than each individual track, a 12-course meal for special occasions between microwave snacks. Like calligraphy, it's a fading art, a format that is out of time" - as people make their own compilations, music will become more authored by the listener, as it will by the a player/dancer (portmanteau = plancer?).

All rhythm games by definition require rhythmic response, but some games allow a greater degree of control via different forms of rhythmic interaction. Rhythm by its very nature can be measured as binary - either on or off, so like Simon Says, a player is either following the command or not…. but there is room for variation of gesture as long as it remains within rhythmic intervals. This is where future motion response technology like Microsoft's new Natal unveiling could prove interesting. There is maybe a market for people not self-conscious enough to dance in front of their TVs – i.e. Children.

???

Sympathetic resonation in both sound and vision across the man/machine divide - would give the illusion of empathy.

Utilizing musics natural lateral resonant characteristics as primary feedback mechanism (in comparision to most games which use graphics); would work better than graphics, which are always two-dimensional, being projected onto a flat screen. Sound, although usually broadcast from a similarly two-dimensiomal source (such as a television) dissipates into the surrounding environment between man and machine in a different manner to the projections of the moving graphical image. Arguably it allows a greater

degree of potential resonance with a player due to the vibrational characteristics of the soundwave frequency, and the constantly open character of the human ear, which can't be closed like the human eye. Music is also arguably more expressive and less open to interpretation than the graphic, allowing for more objective opinions to form in an audience.

Adriano Abbado, 1999, MIT Thesis - **Perceptual Correspondences of Abstract Animation and Synthetic Sound**
http://www.abbado.com/about/thesis/corpo.html
Space - certain modern composers pay great attention to the arrangement of instruments in space and to the spatial pattern that sound follows. The reason for this is that, at the cerebral level, there is only one organ that receive signals for both the eyes and ears: the Superior Colliculus. It can thus be described as the only audiovisual part of the human body.

This organ is responsible for the spatial positioning of aural and visual events - there is a mapping between the position of a signal and the cells devoted to its processing. These cells are activated by both a visual and an aural stimulus - if two signals (one visual, one aural) are perceived from the same point in space, the group of cells will react more intensely. This demonstrates that the spatial perception of an audiovisual event departs from an objective base - everyone will experience the same.

NEWMAN (2004) 'VIDEOGAMES' – Routledge, London and New York

C*hapter 7 - Videogames, Space and Cyberspace*

"Spaces to Play In and With" -

"Henry Jenkins, for example has noted that vidoegames my be seen as a response to the restrictions of a contemporary urban existence in which shared, 'real-world' spaces of play are vanishing (Jenkins 2002: 59 Interviewed in 'Learning Curve: is the academic community finally accepting videogames?' *Edge* April 54-61). Jenkins points to an increasingly restrictive urban environment in which the open spaces of the garden or backyard have become nostalgia for many: "Watch children playing these games, their bodies bobbing and swaying to the on-screen action ,and it's clear they are there - in the fantasy world...perhaps my son finds in his videogames what I found in the woods behind the school, on my bike whizzing down the hills of the suburban backstreets, or settled into my treehouse during a thunderstorm with a good adventure novel - intensity of experience, escape from adult regulation; in short, 'complete freedom of movement' (Jenkins 1998: 3, *Complete Freedom of movement: Video Games as Gendered Play Spaces*, published in Cassell J and Jenkins H (eds) *From Barbie to Mortal Kombat: Gender and Computer Games*, Cambridge MA: MIT Press, pp. 262 - 297)" – 112

"While film, TV, radio and literature all offer glimpses of elsewhere worlds, the opportunity to explore these spaces at first hand - to inhabit them, to get inside them, and it follows, to get away from the restrictions of the non-videgame world - can be seen as an important motivations for play. In this way, the opportunity to adventure within these spaces, as we shall note below is critical" - 113

KING and BORLAND (2003) 'Dungeons and Dreamers: The Rise of Computer Game Culture' – McGraw Hill, California

8 – Gamers, Interrupted

"Outside of young Jenkins' house in suburban Atlanta, there was a sandlot that they could transform into a giant sized game-board. A treehouse could double as a pirate ship, Tom Sawyers raft or a hot air balloon that could take them anywhere they wanted. It was versatile, malleable and best of all it was his. Many years later Jenkins' eyes focused in recollection while he told the story of his own childhood games. In his years studying video games, that concept of physical playspace – and particular the loss of physical space in which children can run around, playing, pushing and fighting – would assume an important role in his thoughts" –184

"The more he watched the kids in front of the TV the more Jenkins thought he recognized what they were doing. This was similar to what he'd done in his own suburban backyard and out in the forest as a kid. Exploring, bonding over the territory they conquered in their imaginations. "I realized they weren't doing this for points. They were exploring space" Jenkins said. "My original insight that it wasn't about saving Princess Toadstool. It wasn't about narrative". …Jenkins had become one of the godfathers of videogame studies" –186

"But these studies in narrative and character aren't necessarily the fundamental strengths of games, at least today. Many game makers from Miyamoto onwards, have focused on creating environments or worlds to explore rather than trying to tell complicated stories. Watch a game being played and it quickly becomes clear it's an exercise in dexterity and movement, not the physically passive experience of reading or watching a movie. A more appropriate metaphor than film for gaming is dance, he argues. Certainly dance productions can tell stories, but the real expressive core of the art is the relationship between motion and space. A dancer moves and their motion *is* the story. So, too, in a videogame; the movement of the digital character through space and the act of exploring the virtual environment can be more important than the more superficial content of the game" –187

"That interpretation helps explain why kids, and particularly boys, have been drawn so wholly to games. He contrasts his own childhood, where he had lawns and whole forests to explore and turn into fantasylands, with his son's world of city apartments it was only a tiny stretch of green in front to play. Exploration of the environment had long been a critical point of growing up, particular for boys, and videogames have become that space for urban children without access to forests and fields he says" –187

"All play is liberation from constraint and taking action in an environment with less consequences" Jenkins said" –188

JENKINS, H (2000) – 'Technology Review: Art Form for the Digital Age' [Online]. Available from http://www.technologyreview.com/read_article.aspx?id=12189&ch=infotech&pg=1 *[Accessed 8/10/08].*

"Games matter because our children no longer have access to real-world play spaces at a time when we've paved over the vacant lots to make room for more condos and the streets make parents nervous. If children are going to have opportunities for exploratory play, play that encourages cognitive development and fosters problem-solving skills, they will do so in the virtual environments of games. Multi-player games create opportunities for leadership, competition, teamwork and collaboration-for nerdy kids, not just for high-school football players."

Synesthesia where colour and sound collide - our brains seem to be wired to be capable of perceiving the same elementary features in several of our sensory modalities. When combined with Kinesthesia could prove very pleasurable. Health and eroding of the dismissive narrow perception of Videogames as a murder simulating medium for teenage boys benefits of active player movement videogames. Will focus on kinesthesia, haptic control and rhythm in videogames in an attempt to investigate fresh ways of using the emerging technology to create new ways of interacting with music. Many people literally can't get to grips with standard console controllers, haptic controls much more immediate.
Music and tactile always go well together - *Velvet* Underground, Venus In *Furs*

Selected Glossary from Woolman (2000) - Sonic Graphics / Seeing Sound - Thames & Hudson, London

Accent: prominence of elements by greater intensity of variation, or modulation of pitch or tone.
Acoutoptics: The science of the interaction of acoustic and optical phenomena.
Ambient: Move away from this, easy to fall into trap of no recognizable structure, such as rhythm or melody as music is generated from computer.
Cacophony: Jarring, Discordant Sound, harsh, disagreeable combination of sounds; Dissonance - can be unsettling but still melodic!
Consonance: Agreement , Harmony, Accord, Unity.
Distortion: An undesired change in the waveform of a signal - consequence being a lack of fidelity in reception or reproduction.
Feedback: A return of a portion of the output of a process or system to its input, especially used to maintain performance or to control a system or process.
Harmony: Musical tones sounded simultaneously - the chordal or vertical, structure of musical composition. Always Harmonious, apart from certain white noise static blast attacks. Keep as constant.
Interdeterminate: not precisely fixed; not leading to a definite result or ending.

Legato: in a smooth, even style; to tie or bind together.

Melody: A path of musical notes; a complex line/path, or plane (as opposed to harmony, which is a collection of musical notes sounded simultaneously). Melody and harmony represent the horizontal and vertical structure elements of musical texture, which is directly linked to rhythm. This is non-constant, constantly in flux with different triggered loops.

Modulation: Change of key within a composition. Each level will be differently modulated.

Octave: range of eight notes in the diatonic scale, where the eighth note has the twice the frequency of the first - change with each set of phrases passed by player - ascend towards level Crescendo.

Ostinato: Short melody or phrase that is constantly repeated, usually at the same pitch - building blocks of game.

Rhythm: The pattern formed by a series of notes with differing duration and stress.

Staccato: cut short crisply, disconnected abrupt.

Static: Variable Interference, obstruction.

Syncopation: A shift of accent in a passage or composition that occurs when a normally weak beat is stressed. Player must shift accents back to right order, one level could start inverted for instance, with all bass and hidden melody.

Tempo: The speed of a musical composition or a section of it, ranging from very slow to very fast. Different environments have different tempos.

Timbre: The quality of a sound that distinguishes it from other sounds of the same pitch and volume.

Tone: A sound of distinct pitch, quality and duration; an interval comprising two semitones.