Steve Reich's 'Piano Phase' and David Cossin's 'Video Phase' : An exploration of David Cossin's Video Phase with reference to Steve Reich's original work Piano Phase.

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Steve Reich's 'Piano Phase' and David Cossin's 'Video Phase'.

An exploration of David Cossin's Video Phase with reference to Steve Reich's original work Piano Phase.

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West Australian Academy of Performing Arts (WAAPA).
Due: 31st October 2008.

The Use of Thesis statement is not included in this version of the thesis.
This paper will investigate Reich's 1967 composition *Piano Phase*, exploring the work's development from tape loops, the resultant patterns found in the work, the process involved, notation used, and also examples of phasing found in other works. Further, discussions will also take place with regards to both the author's, and David Cossin's adaptations of *Piano Phase*, including instrument choice and configuration, film and lighting requirements and rehearsal techniques.

This project aims to present an adaptation of *Piano Phase* for solo percussion and multimedia, which provides an accurate visual representation of the process used in *Piano Phase* as well as taking into account Reich's compositional philosophies.
Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

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Definitions

Minimalism
“A term borrowed from the visual arts to describe a style of compositions characterized by an intentionally simplified rhythmic, melodic, and harmonic vocabulary.”1 Minimalism in music began in the 1960s and 70s, with the most influential minimalist composers being Steve Reich, Terry Riley, and Philip Glass in America, and Henryk Górecki, Arvo Pärt and John Tavener in Europe.

Process Music
Process music is a term that can either be interchanged with Minimalism or be used to describe a particular type or minimalist composition. Process music, in its more refined definition, refers to any minimalist composition where the basic materials are “...extremely reduced ... [and are] developed through repetition and gradual modification.”2

Tape Loop
To make a tape loop, a section of magnetic tape is spliced together (it’s two ends are taped together to form a circle of tape). The sonic effect is similar to when the needle becomes stuck on a LP record.

Phasing
“A term denoting the effect achieved when two [tape loops,] instrumentalists or singers perform the same musical pattern at different (slightly increasing or decreasing) intervals of time, moving in or out of phase.”3

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Introduction

Stephen Michael Reich, born in New York City on October 3rd 1936, has been described as "...one of the greatest living composers..."\(^4\), with his music being likened to "...drugs without the mess."\(^5\)

*Steve Reich is an example of what the recording industry describes as a crossover phenomenon: his music addresses the tastes of jazz, rock, traditional Classical, as well as new music audiences. He was not only the first living "serious" composer to sell out Carnegie Hall in a program devoted exclusively to his own works (Feb. 19, 1980), but also the first "serious" composer to sell out the New York rock/jazz nightclub, The Bottom Line.\(^6\)*

His work, in particular his early compositions, have been described as minimalist, or process music. These early works in particular could be seen as "...rebel[ing] against many aspects of the establishment avant-garde..."\(^7\), as well as the "...intellectual complexity..." and "... numerical manipulations of serialism..."\(^8\).

Due to the many and varied influences on Reich, his compositions embrace not only aspects of the Western Classical tradition, but also the structures, harmonies, and rhythms of non-Western and American popular music. These influences range from jazz musicians Miles Davis and Charlie Parker, to Stravinsky, with his notion that tonality is only asserted by repetition\(^9\). In particular, Reich was intrigued by John Coltrane's "... remarkable expansion of simple two chord structures" as found in 'So What' and 'Freddie Freeloader' from the 1959 album, *Kind of Blue.*\(^10\)

Other major influences include Eastern philosophical thought, with its "...rejection of both goal-direction and Western notions of progress and development - and a consequent aspect of timelessness in the resulting

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\(^5\) ibid
\(^8\) ibid
\(^9\) Schwarz (1980) p. 277
\(^10\) ibid p. 380
music..."\textsuperscript{11}; as well as from non-musical sources such as artists Sol Le Witt, Richard Serra and Michael Snow.\textsuperscript{12}

Reich’s major works include \emph{Its Gonna Rain} (1965), \emph{Come Out} (1966), \emph{Drumming} (1971), \emph{Music for Eighteen Musicians} (1976) and his more recent video opera \emph{Three Tales} (2002).

The work on which this paper is based, \emph{Piano Phase}, was written in 1967 for two pianos, utilising the technique of phasing; a process Reich developed while working on his 1965 tape piece \emph{Its Gonna Rain}. \emph{Piano Phase}, with the alternate title \emph{Marimba Phase} (the performers play on two marimbas instead of two pianos), has been performed in many different ways since it was written in 1967.

One of these cases occurred in 1982 when Belgian choreographer Anne Teresa De Keersmaeker created her work \emph{Fase, Four Movements to the Music of Reich}.\textsuperscript{13} The dancers stand in front of a white wall and are lit in such a way as to create three shadows on the wall behind them, the central shadow being a combination of the two dancers' shadows. An image taken from a performance of the work can be seen below in Examples 1 and 1.1.

\textbf{Example 1}

\emph{Fase, Four Movements to the Music of Reich.} De Keersmaeker (1982)\textsuperscript{14}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{example1.png}
\end{figure}

\textsuperscript{11} Schwarz (1980) p. 280
\textsuperscript{12} Potter, Keith. (2002) \textit{Four Musical Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass (Music in the Twentieth Century)}. New York: Cambridge University Press.
\textsuperscript{14} A still image taken from http://au.youtube.com/watch?v=-wkVXXxRBPw
During the performance, the dancers phase against each other whilst performing spinning motions, creating a visual representation of the resultant patterns that occur in *Piano Phase*.\textsuperscript{16}

Five years later, in 1987, American percussionist Amy Knowles received a grant from the Broody Arts Fund (in California) to create a concert program involving solo percussion and electronics. One of the works Knowles developed was a solo version of *Piano Phase* that used a MalletKat\textsuperscript{17} and computer. Knowles’ computer was programmed to play the stationary part while she performed the part that changes tempo (phases) on the MalletKat.

In 2006, Russian born pianist Peter Aidu performed *Piano Phase* as a solo work, playing with his left hand on one piano and his right on another, a skill which requires extreme levels of concentration.\textsuperscript{19} A still image from a video recording of Aidu performing *Piano Phase* can be seen below in Example 2.

\textsuperscript{15} A still image taken from http://au.youtube.com/watch?v=-wkVXxRf8Pw
\textsuperscript{16} Video footage of *Fase* (1982) can be found at http://au.youtube.com/watch?v=-wkVXxRf8Pw
\textsuperscript{17} A MalletKat is a keyboard shaped electronic instrument that can be used as an alternative to mallet percussion instruments such as a marimba. http://www.alternatemode.com/malletkat.shtml
\textsuperscript{19} Audio and video footage of this performance can be found at http://www.top-40.org/top09/top09.html
Example 2

*Piano Phase*, Steve Reich (1967). Solo performance by Peter Aidu.\(^{20}\)

![Image of Peter Aidu playing piano](image)

*Piano Phase* has also been performed as a solo work using video footage. This idea was developed by American percussionist David Cossin, and was premiered with the alternate title *Video Phase*, in 2000.\(^{21}\)

This project aims to develop a further version of *Piano Phase*, based on Cossin's *Video Phase*, with particular consideration of Reich's compositional and performance philosophies.

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\(^{20}\) A still image taken from a video found at [http://au.youtube.com/watch?v=qKXy1FPTdvg](http://au.youtube.com/watch?v=qKXy1FPTdvg)

\(^{21}\) More information and video footage can be found at [www.DavidCossin.com](http://www.DavidCossin.com)
Piano Phase

Tape Loops
The primary process used in Piano Phase has roots in Reich’s tape pieces and in his experience with Terry Riley’s work In C. Through these experiences, Reich became interested in constant repetition and gradual change.

In 1965, Reich attended a Sunday street sermon at Union Square in San Francisco that was presented by a black Pentecostal preacher, Brother Walter, who was preaching about “Noah and the Flood”. Reich was “...extremely impressed with the melodic quality of Brother Walter’s speech, which seemed to be on the verge of singing.”

Reich recorded the sermon, making a tape loop of Brother Walter saying “[i]ts gonna rain”. He then duplicated the loop and played them both simultaneously on two mono recorders with the aim of listening to the two tapes out of phase. By chance, the two tapes started in exact unison, but due to the imperfections of the two machines, slowly drifted apart and began to phase. Here Reich recounts the discovery of phasing, or phase shifting, which he describes as an “...extraordinary form of musical structure... a seamless, un-interrupted musical process.”

By chance, the two loops were exactly lined up in unison. The sound appeared to be in the middle of my head, but as I listened, it started to move to the left - first to my left ear, then down my left arm, out across the floor to the left then finally a kind of reverb between the channels. I kept listening until the loops were 180 degrees out of phase and I could hear “It’s gonna, its gonna, rain, rain.” I kept on listening and slowly, very slowly, the two loops came back into unison. This was clearly something to pursue.

This recording resulted in Reich’s first phasing piece, It’s Gonna Rain (1965) in which the first section has been described as a “...literal embodiment of

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23 ibid. 20
[the phasing] process."  

It's Gonna Rain was followed in 1966 with Come Out, another tape phasing work that was composed for, and performed at, a benefit for the retrial of the Harlem Six. The raw material Reich used for the work was from a recorded interview with one of the Harlem Six, Daniel Hamm, in which he described his experience at Harlem's 28th Precinct Police Station; "I had to like open the bruise up and let some of the bruise blood come out to show them."

After the success of both Come Out and It's Gonna Rain, Reich continued to use tape in his next two compositions Melodica (1966) and Reed Phase (1966). Reich then began to explore the possibility of transferring this process to acoustic instruments.

Melodica ... was composed of musical pitches ... manipulated with tape loops. It felt like a transition from tape music to instrumental music. Unfortunately, it seemed to me at the time impossible for two human beings to perform that gradual phase shifting process, since the process was discovered with, and was indigenous to, machines. On the other hand, I could think of nothing else to do with live musicians that would be as interesting as the phasing process.

After practising phasing on a piano against a pre-recorded tape loop Reich "...found to [his] surprise, that while [he] lacked the perfection of the machine, [he] could give a fair approximation of it while enjoying a new and extremely satisfying way of playing."

Reich then began to practice this new technique with Art Murphy, a concert pianist and close friend. As a result of their work together, Reich composed his first work for acoustic instruments, Piano Phase (1967), which uses two pianos. Reich gave the work the alternate title Marimba Phase, encouraging the work to be performed by percussionists on two marimbas.
Reich describes his phasing process as a way of "...composing canons at the unison where the subject is short and the rhythmic interval between the subject and its answer is variable."\textsuperscript{31} Reich consolidates this idea by stating "...the process of gradually shifting phase relationships between two or more identical repeating patterns is an extension of the idea of infinite canon or round."\textsuperscript{32}

**Resultant Patterns**

The relationships created between the first of the three patterns, or melodic cells, in *Piano Phase* (Example 3), result in eleven different phase relationships, where $\bullet$ represents the stationary part (part one in the score), $\circ$ represents the phasing part (part two), $\odot$ represents a unison relationship, and $\square$ indicates the beginning of the pattern, or cell, in the second part. This demonstrates that each "...phase position is just a short unison canon with a slightly different rhythmic interval."\textsuperscript{33}

\textbf{Example 3}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{example3.png}
\caption{Example 3}
\end{figure}

\footnotesize
\textsuperscript{32} Reich (2002) *Writings on Music*, p. 20!
\textsuperscript{33} Reich (1988) *Texture-Space-Survival*, p. 273!
In Reich’s *Writings about Music* (1974), he states that:

> Even when all the cards are on the table and everyone hears what is gradually happening in the musical process, there are still enough mysteries to satisfy all. These mysteries are the impersonal, unintended, psychoacoustic by-products of the intended process.34

Reich also states that listening to minimalist, or process music can alter the thought processes of the performer and listener.

> While performing and listening to gradual musical process one can participate in a particularly liberating and impersonal kind of ritual. Focusing in on the musical process makes possible that shift of attention away from he and she and you and me outwards (or inwards) towards it.35

Due to the limitations of this project, the exploration of the concept of psychoacoustics will be limited to the possible resultant patterns realised by the listener.

Further information on psychoacoustics can be found in such texts as Perry (2001)36 and Kramer (1988).37

These ‘psychoacoustic by-products’ are created by the resultant patterns arising from the eleven phase relationships (see Example 3). The by-products, also called “aural illusions”38 are not always the same for every listener, nor are they always the same for one listener hearing the piece many times.

> Listeners may chose to hear melodic or rhythmic patterns as a consequence of their own creative engagements with resultant patterns, and the piece which arises though such engagements has multiple and unpredictable manifestations.39

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34 Reich (1975) *Writings about Music*, p. 10
Three of the many possible resultant patterns, or ‘aural illusions’ that could be heard during the fourth phase relationship are shown below in Examples 4.1-4.4. By examining these few examples, it is apparent that the aural experience can vary substantially, from melodic or rhythmic illusions to a combination of the two. It may be possible, therefore, to consider that a listener may hear pitches that are not present in the phase relationship where these pitches may be part of the harmonic series created by one or more of the notes in the pattern.

In the examples below, † indicates the perceived downbeat of the bar. New time signatures have been assigned to the pattern where appropriate, as have rhythmic groupings to better demonstrate the aural illusion.

Example 4.1

Example 4.2

Example 4.3

Example 4.4
Rhythmic illusions are also common due to the fact that the first pattern of Piano Phase contains twelve notes with no time signature, lending itself to many different time signatures including 12/16, 6/8, and 3/4. Paul Epstein supports this idea of ambiguous meter in his 1986 article *Pattern Structure and Process in Steve Reich’s ‘Piano Phase’.*

...in much of the music of pattern repetition, meter is largely a quantitative factor; one hears that a figure repeats after so many beats, but there is no functional downbeat - or several accents may compete for primacy. (I have heard musicians in Reich’s ensemble speak of the difficulty, in performing his music, of “finding the 1.”)

The use of ambiguous meter could possibly be linked to Reich’s interest in African music, which began in 1962 when he discovered A. M. Jones’ *Studies in African Music.*

I had heard African music but...I didn’t know how it was put together. So to see in notation overlapping rhythmic patterns put together so their down-beats do not coincide showed me a radical new way of making music.

**Phasing Process**

In between these resultant patterns the listener experiences the phase-shifting process. Paul Epstein describes this aural experience in his 1986 text *Pattern Structure and Process in Steve Reich’s ‘Piano Phase’.*

The phasing process begins with a movement away from unison. Although continuous, it is heard in several distinct stages. At first the impression is of increasing resonance, a change in acoustic quality only. At the next stage one begins to hear the voices separate: echo replaces resonance. At a certain point the irrational division of the beat caused by the echo presents a dizzying rhythmic complexity. When the voices are nearly 180°, or one half beat, out of phase, a doubling of the tempo

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is perceived; one has a momentary sense of stability, of a simplification of the irrational rhythmic relationship heard previously. This stage is very brief and is one of those events that seem to occur suddenly. The out-of-phase quality quickly returns and lasts until the new phase locks in.\footnote{Epstein (1986) p. 498-9 !}

The process of phasing has also been likened to optical art\footnote{Schwarz (1980) p. 64} as well as natural phenomena such as a solar eclipse. During a solar eclipse, the moon lines up between the sun and Earth, effectively covering up the sun. These two spherical objects (the Sun and the Moon) represent the two identical patterns in the first section of Reich’s \textit{Piano Phase}, although the Sun and Moon are not identical, they are both spherical, and during a Solar eclipse appear to be the same size. As the Moon covers up the sun, the two spheres are effectively phasing against each other. The process of a solar eclipse can be seen below in Example 5.

**Example 5**
Superimposed images taken during a solar eclipse.\footnote{Image taken from \url{http://www.starstore.com/acatalog/Starstore_Catalogue_Solar_Eclipse_poster_5505.html}}
Further parallels can also be found between *Piano Phase* and a solar eclipse when referring to the move towards unison. When the Moon covers the Sun entirely (as seen from Earth), although nothing new has been presented, a new relationship occurs, with near darkness falling on Earth during the day. The move towards unison is also significant in Reich's *Piano Phase*, when the aural confusion is alleviated and everything returns to normal, as explained by Paul Epstein.\(^{45}\)

\[\ldots \text{the unison phase of Reich's work has special significance ...} \]
\[\text{associated with a solar eclipse [it] provides a striking parallel to the return to unison.}^{46}\]

Williams (1996) has described the phasing technique found in *Piano Phase* as simply a process, stating that "[p]eople who study processes (computer programmers, economists, business planners, etc) like to achieve generality."\(^{47}\) An accurate way of illustrating this generality is to use a flowchart to explain the process. Below (Example 6) is a possible flowchart for the process involved in the first section of Reich's *Piano Phase*, where 'N' represents the number of notes in the pattern and 'I' is the number of phases, or rotations, that have taken place.

\(^{45}\) Epstein (1986) p. 498-9

\(^{46}\) Epstein (1986) p. 501

Example 6
Flow Chart for Phasing Process as found in *Piano Phase.*
Kent (1996) p. 317
**Notation**

To the best of the author's knowledge, the only other instance of phasing as found in *Piano Phase* is in Per Nørgård's percussion work *I Ching* (1982), which uses a different form of notation to depict the phasing process. The following examples show the notation used by Reich (Example 6.1) and Nørgård (Example 6.2).

**Example 6.1**

*Piano Phase* Reich (1967)

![Example 6.1](image1)

**Example 6.2**

*I Ching* Nørgård (1982)

![Example 6.2](image2)
**Other forms of Phasing**

The concept of phasing in music is not limited only to the gradual phase shifting process found in *Piano Phase* and *I Ching*. The term phasing is also used to describe the process found in Reich’s *Clapping Music* where both performers play a twelve-beat pattern in unison before they phase apart. Instead of the second performer accelerating until they are one note ahead, the performer jumps straight to the next phase relationship, essentially moving the first note of the pattern to the end of the pattern.

Terry Riley’s *In C* (1964) uses a different, more relaxed form of phasing that inspired Reich to experiment with gradual change and tape loops, leading to Reich’s more rigid process of phasing. *In C* consists of 53 figures that are performed in order. Each figure is repeated as many times as each individual performer chooses, with only one guideline; the performers have an obligation to contribute to the overall ensemble effect. This results in the performers “...randomly follow[ing] each other through the score...”48 so that often two or more figures are being played simultaneously, gradually progressing towards the end of the work. It is this gradual progression that has been described as a variation of the phasing process.

Reich’s seminal work *Drumming* (1971) employs yet another variation of phasing. Instead of the two patterns starting in unison and then phasing, the second pattern comes in gradually, note by note, referred to by Reich as rhythmic construction, and once complete it is apparent that the pattern is already out of phase. The phasing process in this instance is the *phasing in* of the second part. *Drumming* also utilizes phasing as found in *Piano Phase* and is in fact the last of Reich’s works to use phasing in this way.49

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49 Due to the confines of this research, the above-mentioned works are a selected sample of pieces used to demonstrate selected forms of phasing. !
David Cossin's Video Phase

Background
David Cossin is a New York based percussionist and composer, specialising in new and experimental music. Cossin has invented new instruments such as the Amplified Cardboard Tube, and has created sonic installations that have been presented in New York, Italy and Germany.

Cossin has performed internationally with composers and ensembles including Yo-yo Ma, Thurston Moor (Sonic Youth), Bo Didley, The Bang on a Can All-Stars, Philip Glass, Meredith Monk, Steve Reich and Musicians, and most notably, performed as percussion soloist in Tan Dun's Grammy and Oscar award winning score to Ang Lee's film Crouching Tiger, Hidden Dragon (2000). David Cossin has also performed as a soloist with orchestras through out the world including the Los Angeles Philharmonic, Orchestra Radio France, Sydney Symphony, Gothenberg Symphony, Sao Paulo State Symphony, Hong Kong Symphony and the Singapore Symphony.

In 2000, Cossin was able to present an idea he had been working on for the previous four years, Video Phase.

"Video Phase came about because I wanted to execute an idea I had about this piece. I wanted to find a visual representation that would show the sonic effect that is created [by the phasing process]. The idea was most important to me. The piece came about after many trials and errors. It took about 4 years to get it to where I thought it worked. But the idea came first. I did everything to best represent that.""}

When David Cossin was approximately eighteen years of age, his percussion teacher at the time, James Preiss (one of the original members of Steve Reich's ensemble), introduced him to Reich's compositions.

50 www.DavidCossin.com
51 www.bangonacan.org/all_stars/david_cossin
52 Taken from an interview conducted by the author via email on 19th October 2008
I had no idea what I was listening to but this music really spoke to me. It was a transformation.\textsuperscript{53}

Similar to many people who have experienced Reich’s phasing works, Cossin also feels that the audience plays an active role in the understanding, and ultimate success, of the work.\textsuperscript{54}

One of the things that I enjoy while listening to Reich’s music is that I feel the listener [h]as a very active role in the experience. There is a sense of meditation with the repeated patterns. Things start to pop out that you didn’t realize were there. You can drift from different ways of listening.\textsuperscript{55}

The following sections will include an exploration into the various facets of Cossin’s Video Phase and will be organised into the following sub-headings:

- Instrument choice and configuration
- Film and lighting
- Rehearsal techniques

Information regarding Cossin’s Video Phase will be taken from an interview with Cossin, and from observations of the work made by the author.\textsuperscript{56}

\textsuperscript{53} Interview with David Cossin, 19/10/08
\textsuperscript{54} Reich himself stated “All music to some degree invites people to bring their own emotional life to it. My early pieces do that in an extreme way…” in Writings On Music (2002) p. 21!
\textsuperscript{55} Interview with David Cossin, 19/10/08
\textsuperscript{56} Cossin (2000) Video Phase.
**Instrument Choice**

Cossin chose to use eight synthesizer triggers in a v-shaped configuration, which allows for ease of playing, with four triggers on each side. This can be seen below in Example 7.

**Example 7**

*Video Phase*, David Cossin (2000). Taken from *The South Bank Show* Part 2.\(^{57}\)

When Cossin strikes these triggers with drumsticks, a piano sound is created. Although only seven pitches are used in *Piano Phase* (E, F#, A, B, C#, D and E an octave above the lowest note), Cossin uses eight triggers. If only seven were used, the image created would be asymmetrical (three triggers on one side, four on the other). Having four triggers on each side is more aesthetically pleasing and could symbolise the symmetrical, balanced nature of the phasing process found in *Piano Phase*.

Cossin sits on a chair, or drum stool, with his legs creating a 90° angle. This could be helpful in two ways. Firstly, sitting down reduces movement in the body. If the projected body and Cossin's body (behind the screen) are both moving, but in different ways, the effect of one person with four arms is somewhat blurred. Further, because the piece can be ten to twenty minutes long, sitting down assists in alleviating performer fatigue.

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\(^{57}\) Reich, Steve. *The South Bank Show*. Part 2. Aired in the UK on ITV1, Sunday 10th December, 2006. 11pm. [http://www.youtube.com/watch?v=q0DQRfm0uL8](http://www.youtube.com/watch?v=q0DQRfm0uL8) Still image taken from video.
**Film and Lighting**

Cossin has used front projection, creating an image with a black background.

To execute this piece, I needed to learn about video, lighting, midi triggering ... All of the decisions had to be worked out before recording the video part. Everything from instrument placement to what shirt I would wear...\(^{58}\)

Cossin sits close behind the projection screen (seen below in Example 7.1), with his arms lit from the side.

**Example 7.1**

*Video Phase*, David Cossin (2000). Taken from *The South Bank Show* Part 2.\(^{59}\)

Having the lighting focussed on Cossins arms allows for them to be seen from the audience side of the projector screen. If the lights illuminated Cossin's entire body, the projected image would be obscured. Having Cossin placed quite close behind the screens allows for a more defined and proportionate image, whilst ensuring that the audience isn't required to always be placed directly in front of the screen.

*The piece works best when the audience is right in front of you.*\(^{60}\)

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\(^{58}\) Interview with Cossin, 19/10/08  
\(^{59}\) Still image extracted from video. Reich, Steve. *The South Bank Show: Part 2.* Aired in the UK on ITV1, Sunday 10th December, 2006. 11pm. http://www.youtube.com/watch?v=qODQRfm0uL8  
\(^{60}\) Interview with Cossin, 19/10/08
The pre-recorded footage that Cossin uses is one single take, meaning that he does not utilise tape loops or any video triggering devices during live performance. In line with the score, after the first of three patterns found in the work (the first pattern can be seen in examples 3 and 6.1), the lights that illuminate Cossin’s arms fade out, leaving only the pre-recorded image. The projected image then changes to the second pattern and the live performer fades back in. Between patterns two and three, when the pattern changes from an eight-note, to a four-note pattern, the recorded image is faded out and is faded back in after the live performer changes to the four-note pattern.

Rehearsal Techniques

Rehearsal techniques for minimalist music tend to be quite different to rehearsal techniques for other musics. This is due to their repetitive nature, which requires a high level of accuracy and consistency. Piano/Video Phase in particular requires physical stamina due to its duration and the awkward placement of the drums: on either side of the body, in line with the performer’s shoulders.

Since I am playing from an awkward position (playing from the sides of me body) I feel it is mostly physical training that is needed for preparing.61

Cossin finds that intensive rehearsal one week prior to a performance of Video Phase provides sufficient physical preparation for the work. This preparation is performed with the pre-recorded tape part, to provide consistency.

I find that the best way for me to rehearse this piece is to prepare before a performance one-week prior. I play the complete piece through twice a day and then go back to work on specific sections. Since the video part does not change, I find it easier to phase with the video than I do with another person playing. I know what to expect from the video every time.62

61 Interview with Cossin, 19/10/08
62 ibid !
Fiona Digney’s Video Phase

Background
Ever since my percussion teacher, Genevieve Wilkins, introduced me to *Clapping Music* (1972), I have had a great interest in Reich’s music. Since then, I have performed *Marimba Phase* (1967), *Drumming* (1971), *Clapping music* (1972), *Music for Pieces of Wood* (1973), *Music for Eighteen Musicians* (1976), and *Nagoya Marimbas* (1994). As a performer, Reich’s music is very attractive because it requires total rhythmic stability and consistency, impeccable ensemble skills, and a very high level of concentration. Reich’s works, especially his earlier compositions, create a sense of community, as found in his 1971 composition *Drumming*, where the lack of conductor provides the opportunity, and need, for the ensemble to communicate musical cues to each other. This was influenced by Reich’s 1977 trip to Africa.

*Reich was also intrigued by the African method of organizing the percussion ensemble in performance. ...the Master drummer is in constant control of the group, indicating to the other performers when it is time to change from one rhythmic pattern to the next. ... This structure of statement-response continues throughout a work, lending a unity to a performance that makes it possible to play complex rhythmic structures without the conductor of Western music.*

Having an interest in solo percussion works that include multimedia, it seemed ideal to explore the concept of *Video Phase*; creating a solo percussion work from what was once a piano duet, utilising simple film and lighting techniques to create what appear to be special effects in a live performance.

The explanation of the version of *Video Phase* that has been developed will be outlined using the same structure used in the previous section. The process of developing this version has been documented using video footage and can be found as a DVD in Appendix F. Also, a ‘quick reference comparison table’ outlining some of the differences and similarities between

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63 Schwarz (1980) p. 233
Cossin's version of Video Phase and the author's can be found in Appendix D:

- Instrument choice and configuration
- Film and lighting
- Rehearsal techniques

**Instrument Choice**

Where David Cossin chose to use synthesizer triggers, I chose acoustic instruments, a decision supported by Reich's comments in reference to his trip to Africa.

> It confirmed my intuition that acoustic instruments could be used to produce music that was genuinely richer in sound than that produced by electronic instruments...\(^{64}\)

After some thought, I chose to use Roto-toms for the performance. Roto-toms are tuneable, one skinned drums that have no shell, only the rim and a tension hoop. As seen in Example 8 (below), Roto-toms can be tuned quickly by rotating the head, which sits on a threaded metal bolt. Rotation raises or lowers the tension hoop relative to the rim, which increases or decreases the pitch of the drum.

**Example 8**

Roto-toms\(^65\)

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\(^{64}\) Schwarz (1980) p. 233. Also found in Reich, *Writings About Music*, 1975, p. 58

\(^{65}\) Image Taken from [http://www.8thstreet.com/images/remo-rototoms.jpg](http://www.8thstreet.com/images/remo-rototoms.jpg)
Medium hard felt timpani sticks\textsuperscript{66} were used to strike the drums to produce a clear tone. After a few experiments, I found that the use of wooden drumsticks or rubber mallets, even hard yarn mallets created a click in the sound that can disguise the pitch of the drum.

Roto-toms are usually mounted horizontally, and after substantial research, it seemed that a stand would need to be made to mount the Roto-toms vertically. Below are images of the stands that were designed and produced by Clive Dinely to mount the Roto-toms vertically and also in an arc (Example 8.1), which make the drums more comfortable to play. Different sized Roto-toms have different length bolts requiring spacers to be placed on the drums with longer bolts, so that the skins of the drums create a smooth arc. The drums are fixed to the frame using nuts and bolts, as shown below in diagrams 8.2 and 8.3.

Example 8.1

\textsuperscript{66} In particular, David Morbey 510KK mallets were used. These and other Morbey mallets can be found at http://www.Timpanisticks.com
Example 8.2

a) Rototom to stand connection without spacer.
Example 8.3

a) Roto-tom to stand connection with spacer.

The two drum stands are placed in line with the performer's shoulders, with the performer on a small riser so that the centre drum aligns with the performer's head. Placing the drums in line with the shoulders creates, for the audience, a better sense of elongation in the arms. This is especially helpful when the second, live part begins, giving the appearance of one person with four arms. When the arms are fully extended, the process of phasing between the two pairs of arms is more easily apparent.
Having the performer's head aligned with the centre drum not only allows for a more comfortable performance, but also relates well to Reich's comments regarding the involvement of the minds of the audience members.

\[ \text{All music to some degree invites people to bring their own emotional life to it. ...that process that invites this very engaged psychological reaction.}^{67} \]

In addition to this, the performer's head is in the centre of what our minds see as a circle, representing the continuous phasing process.

Similar to Cossin, I chose to keep the bottom half of my body stationary. To achieve this, I kneeled on the ground, effectively sitting on my heels. This helps to keep the body still, which serves two purposes. One is that with less movement, the combined image of the performer's body on the projection screen is more defined. The second reason is that as the music communicates with the audience directly, it does not need to be enhanced by movement from the performer.

\[ \text{Reich's music may often make listeners want to dance or at least move along with it, but the players in Reich's ensemble do not betray any such impulse - they stand alert with only their hands moving, while their bodies are very centred and without tension. ... There is no call or indeed opportunity for outward display or other personal kinds of audience "communication". It is the music that makes contact with the audience.}^{68} \]

Reich also supports this statement in his 1972 interview with Michael Nyman.

\[ \text{..."mechanical" playing ... is something that we could do with more of, and the "human expressive" activity which is assumed to be innately human and associated with improvisation and similar liberties is what we could do with less of right now.}^{69} \]

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67 Reich (2002) p. 21
68 Reich (2002) p. 18
Film and Lighting

Unlike Cossin’s Video Phase, the version I have developed uses silhouette for both the pre-recorded and live parts (as seen below in Example 9), creating an image of one figure with four arms.

Example 9

This aims to provide a visual representation of Reich’s desire for timbral continuity. Reich elaborates on timbral continuity in his 1988 text Texture-Space-Survival,

...Piano Phase [was] written for multiples of identical instrument because if for instance, in Piano Phase I play piano and you play harpsichord or synthesizer we will hear the separate timbres moving out of phase without the complete blending between the two to produce a contrapuntal web in the way we would if we use two pianos or two harpsichords or two synthesizers.70

Also stating that

...multiples of identical instruments with the same timbre were acoustically necessary in my early pieces to create the overall contrapuntal web and particularly the ambiguity as to where the downbeat it, since two or more equal downbeats are always sounding with the same timbre throughout.71

Similarly to Cossin’s version, my version requires the live performer to be very close behind the screen onto which the pre-recorded footage is projected (as seen in Example 10, below). This results in the silhouette created by the live performer creating a sharp image onto the screen.

Example 10
Configuration during performance

To record the projected image for *Video Phase*, film student Nsubisi Mwambenja and I used a Sony Z1 HDV camera with a wide-angle lens to create an image with more depth, with a Sony Omni directional microphone with XLR cables to capture the sound. To create the silhouette, blue light was cast on the wall behind the performer from lights that were placed behind the performer (as seen in Example 10.1, below), facing towards the wall. If the lights were directly above, or in front of the performer, light would be cast onto the performer’s face or body and the effect of the silhouette would be lost.
Example 10.1
Configuration during recording

Unlike Cossin’s *Video Phase*, I decided to create three video loops – one for each of the three patterns found in the work. It can be very difficult to count repetitions whilst phasing, which in turn causes discrepancies in the duration of the work. Using a tape loop, the performer can control when to move onto the next pattern.

To perform the work, the pre-recorded, looped image was cast onto a projection screen\textsuperscript{72} using a Benq MB 6120 projector. As mentioned earlier, the performer was placed roughly 30cm behind the screen. A light was placed about 3m behind the performer with a blue gel covering it to create the right colour light. If the light is a different colour to the colour of the projected images’ background, the two silhouettes will be different colours. Ideally, both the pre-recorded image and the silhouette that is created live will be the same colour. Unfortunately this effect is harder to achieve than first thought, and has so far evaded both Nsubisi and I.

Similarly to Cossin’s *Video Phase*, my version requires the live performer to both visually and aurally fade out after the conclusion of the first, twelve-note pattern. While the light from behind the performer is dimmed, the

\textsuperscript{72} For this dissertation, the only screen that was accessible at the time of filming was a plain white sheet. For the recording of the public performance of the work (a recording of which can be found in Appendix F) a semi-transparent projection screen will be used.
performer fades out aurally by playing softer and softer and eventually stops playing when there is no longer a silhouette being cast on the screen. Running the light’s power through a lighting desk and reducing the electrical charge to the light by adjusting the settings on the lighting desk achieves the visual fading.

After fading out, the performer will need to re-tune the two middle drums, the B down to an A and the C# down to a B. Whilst the performer is retuning the middle drums, another person will trigger a change to the second, eight-note, pattern. A similar process is used for the transition between patterns two and three, except this time the pre-recorded image is faded out while the live performer changes to the third pattern.

A fourth image was recorded for the ending of the work. Once both the third tape loop and live performer are in unison, the fourth video, which is not a loop, is triggered. This footage contains four repetitions of the pattern before stopping and ending the piece as a live performer would. The live performer mirrors the action of the projected image until both the projected image and the light behind the performer are dimmed to darkness. This ensures that the audience remains unaware of which silhouette is pre-recorded, and which is produced live.

Rehearsal Techniques

Although phasing is a simple concept, it can be quite difficult to achieve as it goes against what musicians are trained to do, which is to keep in time. As discussed earlier, the process of phasing requires one performer to increase their tempo by around 1 to 3 beats per minute (BPM) until they are one semiquaver (in the case of Piano Phase) ahead of the stationary part. The performer who executes the phase then has to decrease their tempo to match the stationary performer, remain in that phase relationship for between four and sixteen repeats, and then phase again. This technique requires many hours of practice to produce a clearly defined and well-balanced phase. A practice CD used to assist in rehearsal can be found in Appendix F.

To create the practice CD, the three patterns performed by player one (the stationary part) were imputed into Sibelius Version 5 (a music notation and
production program) as three separate files. Each file, or score, contained the same bar of music, or pattern, repeated many times to create around 6 minutes of music. These Sibelius files were then imported into Waveburner (a music production program) and arranged as tracks on a CD and then copied onto a blank CD. A practice CD could also be produced containing all the phase relationships found in Piano Phase. Playing with the practice CD not only helped me practice the phases but was also assisted me in becoming more familiar with the phase relationships. By knowing the phase relationships, the performer is better able to identify if they have achieved a phase, skipped a phase, or even returned to the same phase relationship after attempting a phase.

The other issue that can be alleviated by the presence of a practice CD is that of stamina. These issues of stamina arise due to both the duration and content of Piano Phase, as well as the positioning of the drums relative to the performer. The work can be up to twenty minutes or more, with each performer only playing three different patterns. The author found that playing for two minutes, then five minutes, and eventually up to twenty minutes, with a practice CD very useful in training the muscles in the arm and back.

73 This could also work with earlier version of Sibelius.
Conclusion

Both the author's, and Cossin's adaptations of Piano Phase produce an effective visual representation of the process found in Reich's original work. In both adaptations, the performer does little to connect emotionally with the audience, but instead, allows the music to engage directly. Reich elaborates on this aspect of his music in his collection of essays, Writings on Music (2002).

_All music to some degree invites people to bring their own emotional life to it. My early pieces do that in an extreme form, but paradoxically they do so through a very rigid process, and it's precisely the impersonality of that process that invites this very engaged psychological reaction._74

Although there are still problems with my adaptation of the work - such as the difference in hue of the pre-recorded and live silhouettes - many hours of research and experimentation have helped me to understand that it is not only the result that is important, but also the _process_ used to produce the result.

Steve Reich has made an enormous contribution to Western music from classrooms to concert halls and nightclubs.75 His intuitive music has spanned generations and cultures, with Reich still performing around one hundred and fifty concerts a year.76

Steve Reich has, from as early as 1964, used new technology for his compositions. He utilises influence from many different cultures and time periods, most notably the current popular cultures. This has continued to the present with works such as his video opera Three Tales (2002).

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74 Reich (2002) p. 21
75 In 1999 an album titled Reich Remixed was released by Nonesuch Records featuring popular DJ's sampling Reich's compositions.
76 For a full list of concert dates, see Reich's website http://www.SteveReich.com
His admirers have created, and are continuing to create adaptations of his works using new technologies. As these technologies improve, incorporating multi-media into solo instrumental works will become easier, providing many new opportunities for musicians, film technicians, DJs, lighting experts, artists, and other visual artists.

This research will hopefully provide a continuation on from the fantastic work of Reich and his admirers such as David Cossin. It is hoped that this will encourage more young musicians to learn about Reich’s music and create more adaptations of his works using multimedia and other art forms.
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Appendix A

Consent forms from David Cossin and Gary France
Consent Form

Steve Reich's 'Piano Phase' and David Cossin's Video Phase

An exploration of David Cossin's Video Phase with reference to Steve Reich's original work Piano Phase

I, David Cossin, have received, read and fully understand the information provided to me by Fiona Digney in the form of an Information letter.

I have been given the opportunity to ask questions regarding the research topic and interview with any questions have been answered to my satisfaction. I also understand that I am able to ask additional questions at any time by contacting the primary researcher, Fiona Digney at f.digney@qut.edu.au (+6148902729) or the project supervisor, Dr Matt Blythe at m.blythe@qut.edu.au (+61416260512).

I understand that my participation in this project will involve an interview via email including questions regarding my performance of Video Phase, including hardware and software requirements, rehearsal techniques and my thoughts on how Video Phase compares to Piano Phase in regards to adhering to Reich's compositional philosophy.

I agree to be identified in Fiona's project YES, NO (Please circle)

I am aware that I am free to withdraw my consent to be interviewed or identified at any time without explanation or penalty.

I freely agree to participate in this project.

Signed: 

Date: 15/03/08

If you have any concerns or complaints about the research project and wish to speak to an independent person, you may contact:

Name: Associate Professor Jan Cory
Title: Chair of the Faculty of Education and Arts Human Research Ethics Committee
Consent Form

Steve Reich's 'Piano Phase' and David Cossen's Video Phase
An exploration of David Cossen's Video Phase with reference to Steve Reich's original work Piano Phase.

I, [Name], have received, read and fully understand the information provided to me by Fiona Digney in the form of an information sheet.

I have been given the opportunity to ask questions regarding the research topic and interview and any questions have been answered to my satisfaction. I also understand that I am able to ask additional questions at any time by contacting the primary researcher Fiona Digney at digney@student.unisa.edu.au (+61 439627228) or the project supervisor Dr. [Name] at [email protected] (08 8813 8534).

I understand that my participation in this project will involve an interview via email including questions regarding my performance of Video Phase, including video and audio results with samples, techniques and my thoughts on how Video Phase compares to Piano Phase in regards to adhering to Reich's compositional principles.

I agree to be identified as [Name] in this project (☑) (Please circle)

I am aware that I am free to withdraw my consent to be interviewed or identified at any time without explanation or penalty.

I hereby agree to participate in this project.

Signed

[Signature]

Date: [Date]

[Name]

[Role]

[Institution]
Appendix B

Transcript from interview with David Cossin via email, 19th October 2008

FD - When did you first hear Reich’s music and what was your initial reaction?

DC - I heard Steve Reich’s music for the first time when I was about 18 years old. My teacher at that time, James Preiss, who is one of the original members of Steve Reich’s ensemble, invited me to a concert in NY where they performed Drumming. I had no idea what I was listening to, but this music really spoke to me. It was a transformation.

FD - What do you enjoy most about listening to or performing Reich’s music?

DC - One of the things that I enjoy while listening to Reich’s music is that I feel the listener as a very active role in the experience. There is a sense of meditation with the repeated patterns. Things start to pop out that you didn’t realize were there. You can drift from different ways of listening.

FD - What inspired you to develop Video Phase?

DC - Piano Video Phase came about because I wanted to execute an idea I had about this piece. I wanted to find a visual representation that would show the sonic effect that is created. The idea was most important to me. The piece came about after many trials and errors. It took about 4 years to get it to where I thought it worked. But the idea came first. I did everything to best represent that.

FD - Did you find that you needed to use any specific hardware/software to create your performance? – If so, please detail.

DC - To execute this piece, I needed to learn about video, lighting, midi triggering and how to build an instrument that would work well for the performance. All of the decisions had to be worked out before recording the video part. Everything from instrument placement to what shirt I would wear, since I couldn’t change these things after I made the initial video.

FD - Did you discover any rehearsal or training techniques that were specific to the performance of Video Phase? Please detail.

DC - I find that the best way for me to rehearse this piece is to prepare before a performance one week prior. I play the complete piece through twice a day and then go back to work on specific sections. Since the video part does not change, I find it easier to
phase with the video than I do with another person playing. I know what to expect from the video every time. Again, the most important thing is the idea and the execution of that idea. What I need to do to make that work is what I do. Since I am playing from an awkward position (playing from the sides of my body) I feel it is mostly physical training that is needed for preparing.

**FD** - How do you think *Video Phase* aligns with Steve Reich’s compositional philosophy of exposed structure compared to his original composition, *Piano Phase*?

**DC** - I think that it aligns well. You are showing the musical process in a new visual way. I have performed this piece with Steve Reich’s group and I feel it gives a new light to this classic work.

**FD** - Did you encounter any problems specific to *Video Phase* in the preparation or performance of the work?

**DC** - Just that it is physically difficult on my body compared to other pieces I play of his. More thought has to go into lighting and placement on stage. The piece works best when the audience is right in front of you.

**FD** - Did you document your process of developing *Video Phase*?

**DC** - I have my own personal documentation of how I get the piece to get. Old videos, different instruments and stands.

**FD** - Did you do much background research into Reich and his compositional philosophies surrounding *Piano Phase* before or during the development of *Video Phase*?

**DC** - I know the piece well and played a lot of his other music. I studied the original recordings and made some choice into how long I wanted the piece to be. By the time I was working on *Piano/Video Phase*, I was a big fan of Steve Reich’s music, so I know what I was getting myself into for the most part.
Appendix C

Transcript from interview with Gary France via email, 7th October 2008

FD - When did you first hear Reich’s music and what was your initial reaction?

GF - 1977, I performed Music for pieces of wood for Mr Reich, loved it.

FD - What do you enjoy most about listening to or performing Reich’s music?

GF - I enjoy the rhythmic precision that is required in all parts. This precision’s end result is a whole that is greater than the sum of the parts. Each part is like a thread in a multi coloured tapestry.

FD - What inspired you to develop Video Phase?

GF - I saw DC perform it at the Sydney Opera house and thought the concept was sound. I was also looking for a project that would allow me to explore some new hardware that I was purchasing for the Australian National University’s New Media Music Laboratory, of which I am the director.

FD - Did you find that you needed to use any specific hardware/soft ware to create your performance? – If so, please detail.

GF - In the performance of Video phase I use: Alternate mode Drum Kat midi controller version 6.1 OS 5 Roland trigger pads mounted on two cymbal trees. Bose PAS linear arrays (2) Kurzweil PC2R Sound module Macbook Pro notebook computer (to play original image) Data Projector Video screen of my own design that allows for front projection as well as 4 Dichromic Halogen 12 volt lights with colour correction film

FD - Did you discover any rehearsal or training techniques that were specific to the performance of Video Phase? Please detail.

GF - My version of this project was developed independently of any other performance, I am not aware of how David Cossin produced his version. My concert is my own from the ground up. Challenges were the implementation of aesthetic goals within the available technology.
FD - How do you think *Video Phase* aligns with Steve Reich’s compositional philosophy of exposed structure compared to his original composition, *Piano Phase*?

GF - Very good, S.R. has indicated that he is comfortable with this version.

FD - Did you encounter any problems specific to *Video Phase* in the preparation or performance of the work?

GF - I encountered a steep learning curve in Drum KAT 6.0 as well as all other modules and materials. The technical design and development of a video screen that allows light to pass through is also at odds with standard projection materials that are actually designed to stop light!

FD - Did you document your process of developing *Video Phase*?

GF - Not really except for the versions of performances that I have given. I am currently presenting version 2.

FD - Did you do much background research into Reich and his compositional philosophies surrounding *Piano Phase* before or during the development of *Video Phase*?

GF - Not really as I have performed most of his pieces throughout the last 25 years.
# Appendix D

## Quick Reference Comparison Table

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