

## Minimalism, Philip Glass & Electronic Aesthetics

### 0. Introduction

My concern in this essay is two-fold. Firstly, I will take a look at the history of minimalism in music (in chapter 1) via Philip Glass whose music, both in its acoustic and in its electro-acoustic properties, I will then analyse (in chapter 2) from the perspective of its aesthetics. Lastly (in chapter 3), I will take a short look at the contemporary electronic music scene and offer parallels between what can be called ‘post-minimalism’ and the ‘techno/ambient’-scene. I will offer some examples of the aesthetics of (mostly German) *minimalist techno* in particular. Ultimately my aim is to take the various branches of minimalism (Glass, Reich, non-Western, contemporary electronic) not as linear developments from an ideological premise but as proof of the inevitable *resurgence of non-teleological modes of music in the West*. Minimalism, we will see, characterizes many different types of music, and is a general feature of various post-modernist (and post-modern) styles.

### 1. Origins of Minimalism: Glass and Reich

I will try to situate Glass’s music within the context from which it sprung: A) his early collaboration with Steve Reich, B) his rejection of modernism and serialism, C) his introduction to non-western musics through Ravi Shankar and Alla Rakha, and, D) his focus on theatre and collaboration. Then I will be able to move toward a closer look at his aesthetics.

Who exactly were the minimalists? Who exactly classifies? Keith Potter’s book on minimalism (2000) traces the works and histories of La Monte Young, Terry Riley, Steve Reich and Philip Glass, apparently in order both of chronology and (in his mind) rising importance. To this list could undoubtedly be added more composers, as well. I will not deal with either Young or Riley, but a few words on Steve Reich are in order.

Steve Reich’s influence in electro-acoustic and *avant garde* circles is no doubt considerable. It should be remembered that Reich and Glass were early collaborators since the 1960s, and only parted ways around the mid-70s when Reich went on to produce *Music for 18 Musicians* (1974-76) and Glass wrote *Music in Twelve Parts* (1971-74) and started his operatic

career with *Einstein on the Beach* (1976). Reich's early work on tape, most notably *It's Gonna Rain* (1965) and *Come Out* (1966) still exert considerable influence on modern cut-up techniques of American DJs and hip hop artists such as Dj Spooky. Reich's early 'phasing' works also predate Glass's minimalism by a few years. In the 1990s, Reich has continued to work for electro-acoustic ensembles, in works such as *City Life* (1995) which attempts to imitate, iconically, the sounds of cities (such as trains and streets), using a mixture of sampling techniques, synthesizers and orchestral instrumentation. Glass and Reich belonged to the "'downtown' scene of New York's Greenwich Village and SoHo in the 1960's and 1970's" (Potter: p.18) and emerged from the same environment of intellectual rejection of both neo-classical modernism and serialism. In relation to Glass's development, it is interesting to find that "non-Western traditions ... have had a powerful influence on the spiritual development, and lifestyle, of Young and Riley, and ... have also influenced Reich and Glass" (Potter: p.17). So, minimalism shares a common interest in non-Western lifestyles and ideas; another commonality is the interest in pop and world music. Potter notes that "Glass remains to this day a practicing [Tibetan] Buddhist" (p.259). All this takes us to the subject of the intellectual climate against which the minimalists were rebelling.

The 'school' (or movement) of musical minimalism developed out of the middle-of-the-century vacuum left behind by the exhaustion of the possibilities of neo-classicism combined with the excesses of European avantgardists, whose music, it was felt by people like Reich and Glass, was alienating the public from concert music because, in it, *experimentation* was given precedence over the *pleasures* (whatever that might mean to different people) of music itself. Both Reich and Glass rebelled against "the fragmented discourses of serialism and indeterminacy" (Potter: p.17) and sought ways to start from scratch, as it were. Glass has not been kind on middle-of-the-century serialism; as Potter recounts, Glass was "critical of the activities of Boulez and the European serialists in the 1960s, speaking of 'a wasteland, dominated by these maniacs, these creeps, who were trying to make everyone write this crazy creepy music'" (p.10). This is a spiteful statement, and proof enough that Glass didn't want anything to do with serialism as it existed in his day. If serialism, in his mind, represented 'crazy creep music', what did he offer instead?

His early minimalist work was driven by a puritanical attitude (Potter: p.304, my italics): "[T]he composer's main preoccupation from 1965 to 1969 was with *structure* and, in particular, with the *purity* and *clarity* of that structure." This he had in common with the serialists. But, as Potter points out: "Glass's starting point, like Reich's, was rhythm not pitch" (p.270). This set them apart from traditional Western notions of harmony, but also from prevalent electro-acoustic, serialist, musicians who focused on non-linearity, sound events and noise experimentation. For Reich the influences were Jazz and drumming. Glass himself encountered the inspiration for his

minimalism when he encountered Ravi Shankar and his table player Alla Rakha: “[W]hile Western music worked on the principle of division, Indian music – and, as he soon discovered, many other non-Western musics – worked on the principle of addition ... The principle of additive rhythm was to revolutionise the way he thought about composition, and it seems that the initial inspiration for this was [Ravi] Shankar. ‘That was the closest I’ll ever get to a moment when the creative light suddenly kicks in,’ Glass subsequently said” (Potter: p.258). He has subsequently collaborated with Shankar on many occasions and, moreover, gives him credit for introducing him to the Indian ideas of *cyclical* and *additive* music, which gave him the impetus to rethink Western concepts of music.

He composed prolifically for years, refining his methods, until in 1971, in *Music in Twelve Parts*, “we reach the culmination of Glass’s achievements in the works written for his own ensemble between 1968 and 1974” (Potter: p.311). More on this fascinating piece later; anyway, it was to be a culmination, a tipping-point, for Glass in terms of his stylistic development. After around 1975 Glass started working more and more around different people in the world of opera, theatre, movies and popular music. With his subsequent Operatic Trilogy, he did something quite unlike the Romantics (such as Wagner) whom many people compare his work with: “The emphasis of [my] work has been on *collaboration* throughout ... [On the other hand, and for the most part], operas in the Italian and German traditions were the work of one man with one vision.” (Glass: p.208) Postmodern theory, we may recall, wanted to do away with the ‘Author’; in Glass it is absolutely so. Firstly, in his early minimalist works, he did away with the idea that a composition must contain an inner drive to a resolution or some teleological goal to be reached. He did away with *subjectivity* in music. Instead, he offered unfolding processes (or ‘structures’) of repetitive, cyclical rhythms. Secondly, and just as importantly, after 1975, he diminishes the role of the composer by focusing on *collaboration*, whether between musicians (e.g. classical or popular) or between music and theatre folk, or between music and cinema. The development of his move from ‘minimalism’ to ‘post-minimalism’, and his sound aesthetics, will be analyzed in the next chapter.

‘Minimalism’ as a term, by the way, has not been uncritically accepted by either Glass or Reich. It started out as more of a term of music criticism and journalism. Other, perhaps more accurate, terms suggested are “hypnotic music” (Potter: p.2), coined by critic Tom Johnson in writing about Glass’s *Music in Twelve Parts*, and “pulse music” (ibid: p.3), coined by Steve Reich to describe his own music. I like ‘hypnotic’ music; it seems accurate in the context of both Reich and Glass, on the one hand, and ambient/techno on the other. These terms will become more pertinent once we take a closer look at minimalist and post-minimalist aesthetics in the next chapter.

## 2. The Aesthetics of Glass: Acoustic and Electronic

A succinct crystallization of Glass's minimalist technique would be that it contains "cyclic processes in combination with additive structures" (Potter: p.281). 'Cyclic,' because repetitive, and 'additive,' because slowly unfolding/accumulating novel sound material (such as notes, rhythms etc.) *within* the cyclic overall structure of the piece of music. I will leave a more traditional musical analysis of his techniques to someone with a formal training in that area. Instead, I will explore his aesthetics mainly in relation to the electro-acoustic world that preceded him (to simplify, *serialism*) and the one that came after him (to again simplify, *techno*). Arguably his aesthetics stem from three primary roots: Indian, Western Classical/Romantic and Rock/Pop. Unlike Reich, he was less influenced by Jazz. However, on top of all this, I think that his music is based on a very modernist *machine* aesthetic; the minimal repetition and structural unfolding of 'non-human' processes.

Serialism and minimalism were clearly *ideologically* opposed in many ways. However, as Richardson points out (p.23), "Kyle Gann, among others, has argued that minimalism and serialism should be viewed as two sides of the same coin." Why? Because the similarities are clear despite all the differences. Richardson concurs (*ibid.*): "[Reich's] early tape pieces and the phase-shifting technique that developed out of them are quite obviously indebted to the rigorous principles of organization of the serialists as well as to Cage's nonintentionality. Strict process music is very definitely, as Michael Nyman was first to observe, the offspring of serialism."

So, for example, while Philip Glass *disliked* the music that he heard in Paris during his student years (Potter: p.255), he nonetheless heard Boulez and was to some extent influenced by it. Also, during his early years, he wrote a number of twelve-tone compositions (Richardson: p.20) before turning to minimalist techniques. And, through Reich, he was well acquainted with electro-acoustic cut-up techniques derived, to a large extent, from French-German origins. Furthermore, the common interest in rather 'non-human-sounding' techniques of composition certainly puts serialism and minimalism (both in their acoustic and electro-acoustic variants) in the same atmosphere where mathematically rigorous processes were seen as the building blocks of music. Glass himself uses phrases like "the structural essence of the idea" (Potter: p.289) in describing his compositions. The idea of 'repetitive' processes is very structuralist; serialism, after all, is pure structure. Also, the idea of 'additivity' is a straight-out mathematical term, borrowed from arithmetic, the favourite plaything of many electronically inclined serialists. This, at least, have Stockhausen and Glass in common (although not much else): a fascination with structure, mathematics and 'non-human' processes that strives to break with Romantic notions still prevalent in early musical modernism.

But this formalistic aspect to his music began to crumble, around the beginning of the 70s, as Glass had enough of following his own rules. He then underwent “a natural development away from previous minimalist concerns” (Potter: p.252). First he wrote *Music in Twelve Parts* during the years 1971-74, which was the culmination of his techniques up to that point, and one of the highest achievements of minimalism overall, together with Reich’s *Music for 18 Musicians* of the same period. In this roughly 4-hour series of 12 movements (or ‘Parts’), his basic techniques of repetition, cyclicity and additivity are explored to the fullest. This piece is also his last major, truly *minimalist* piece. The later Glass could be called, as Potter does, a *post-minimalist* composer, having rejected, gradually, the purism of his early works. This break shouldn’t be exaggerated. However, there are three clues that something significant happened during that period: 1) The last movement of *Music in Twelve Parts* contains a slowly unfolding dodecaphonic series, as a sort of ironic homage to twelvetonism, leading to a kind of *resolution*, something he had been consciously shunning until then, needed to bring to close this 4-hour-long piece of music; 2) The next piece of music that he wrote (in 1975), was called *Another Look at Harmony*, which was a return, of sorts, to the principles he had rejected earlier, of harmony and melody and, as mentioned above, of a kind of (teleological) resolution of thematic and harmonic content. 3) In 1975, his major breakthrough, *Einstein on the Beach*, incorporated several hithertofore unknown elements to Glass’s music (in addition to the fact that it was, after all, his first opera), including thematic exposition, teleological unfolding of harmonic material, repetition not only of elements but of whole themes and, overall, a renewed concern for rather traditional (although many would not see it like that) Western concepts.

Potter encapsulates the ‘New Glass’ very well: “Most significant of all ... in this ‘post-minimalist’ music, is the arrival of a kind of harmonic motion: a development which naturally interacts in a variety of ways with the other new aspects [including, he lists, ‘melodic profile, timbral variety and sheer sonic allure’], and with the ongoing energy of repetition itself, but which tends towards musical results in which *harmonic progression*, and sometimes a more encompassing *narrative development* across broader spans of time, becomes more important than audibility of the sorts of note-to-note processes more characteristic, in any case, of [Glass’s] earlier music” (p.16, my italics). In other words, the later Glass could use and mix different strategies rather freely.

This movement from ‘minimalism’ to ‘post-minimalism’ is curious, because it allows for a merger of traditional Western concert music with various minimalist, popular and world music themes. Consequently, after about 1975, his “[h]armonic motion and melodic ingenuity have allowed the especially prolific, and sometimes indiscriminating, Glass to write everything from large-scale operas to pop songs.” (Potter: p.16) Yet he did so by retaining the essential components of his early, ‘puritan’ minimalist works. In fact “[r]igorous additive process [in Glass] offers, like

phasing [in Reich], a way into a musical structure which may otherwise seem merely aimless” (p.272). The music doesn’t stay still but is always moving (if not, strictly speaking, progressing *towards* anything). In a way Glass’s early minimalism contained an internal logic which could be harnessed, with the help of some traditional ideas of harmonic development, to produce sustainable operatic and symphonic ‘movements’ in the traditional sense. Glass’s music, in its post-minimalist or late-minimalist variations, especially in his Operatic and stage work, produces climactic resolutions of thematic and harmonic tensions – he is *both* anti-Romantic *and* neo-Romantic.

Since there isn’t, after all, a single ‘purely’ electronic composition to be found in Glass, how is he an electro-acoustic composer? Two answers: 1) First, there is his legacy in Reich’s cut-ups and, also, the influence on him (however begrudgingly admitted) by serialist concerns for machine aesthetic. This is most perceptible in works like *Music in Twelve Parts*, which sounds very much like a machine-generated piece in its precise mathematical structure; and in *Einstein on the Beach* there is even a mock-sampling technique used, akin to Reich’s work, whereby a live reading of nonsensical, ‘radio-like’ monologues of the weather, the city and the park are overlaid on top of the keyboards and the voices. This is a case of (largely acoustic) performance art being influenced by cut-up techniques, and not the other way around. 2) Then there is the fact that, almost from the beginning, Glass’s own Ensemble has been amplified in order to produce a tight, well-balanced sound. Glass himself plays the keyboard in the Ensemble. As he himself describes it, he wanted “a high incidence of keyboard players. ... Presto: an amplified ensemble!” (Glass: pp. 112-113) The ‘keyboard sound’ is what characterizes his 70s works and beyond. Some, like *1000 Airplanes on the Roof* (1988), sound *very* synthetic and synthesized, almost like Vangelis. Overall, very few of his compositions are completely ‘acoustic’. Recall, too, that in *Einstein* the first sound we hear is that famous descending keyboard line, which is the first exposition of the ‘theme’ of the opera.

He also describes in his book how studio editing has become a big part of producing the final ‘mix’ of his work; in the recording of *The Photographer* (1982), Glass recounts (pp. 199-200) how “[o]f particular interest to us was a full use of overdubbing techniques ... After the original orchestra was recorded, additional parts were added, or doubled, onto the original ones. These were synthesized sounds, electronically generated, used to enhance and extend the original instruments. A trombone part, for example, might have an electronic part added to it an octave below what was originally played. On the final mix of the record, instead of hearing a trombone, the listener is hearing something more like a *super-trombone*. Applied to the whole orchestra, the result is *a sound beyond anything an orchestra could play live*” (my italics). From trombone to *super-trombone*; it is a matter of finding the perfect synthesis of acoustic and electronic techniques. He muses that most

(traditional) “[m]usicians have become increasingly comfortable working in recording studios, and they have learned to *perform* in this new situation” (Glass: p. 200, italics in the original).

Both *Satyagraha* and *Akhmaten*, the next opera works Glass did after *Einstein*, used various electro-acoustic techniques. *Satyagraha* featured a heavy incidence of keyboards (Glass: p.113-114) while *Akhmaten* gives us another noteworthy example of electro-acoustic enhancement, as Glass recounts (p.160, my italics): “We had a studio full of synthesizers as part of my Ensemble equipment and, by carefully programming them, Michael [Riesman] achieved a fairly good *facsimile of an orchestra*. Kurt [Munkacsi] handled the multitrack recording and mixing ... The result was that a full year before our opening night in Stuttgart we had a complete synthesized orchestral version of *Akhmaten*.” Creating a facsimile of an orchestra was the dream of W. Carlos and R. Moog. Here it is utilized for very practical purposes by Glass’s ‘amplified’ Ensemble.

My essay attempts to argue for possible linkages that go beyond straightforwardly influential compositional techniques. Philip Glass’s influence, and the influence of minimalism and post-minimalism in general, is more of the indirect kind. It crosses the boundary between the ‘high’ and the ‘vernacular’. Minimalism’s explosive influence (as we will see, largely through its later anti-puritan, *post*-minimalist extrapolations by Glass and others) involved what Potter saw as a “re-alignment of avant-garde, ‘cultivated’ and ‘vernacular’ elements” (2000: p. 341). Furthermore, the mass popularity of Glass’s work has meant a renewed interest in ‘serious’ music (and opera in particular) by the public, as Richardson readily acknowledges (1999: pp. 2-3), going as far as to “attribute partial responsibility for the contemporary Wagnerian movement to Glass” (ibid: p.2) through his Operatic Trilogy. This (loose) trilogy started with *Einstein on the Beach* (co-written with Robert Wilson), first performed in 1976, and occupied him for the next decade or so, during which *Satyagraha* (1980) and *Akhmaten* (1983) were written and performed in places as varied as Stuttgart, New York, Avignon and London, and indeed across Europe. Curiously enough, Glass’s major works have only very occasionally been staged in America (New York and Chicago being the exceptions). Many will bear a grudge on him precisely *because* of his popularity, which is seen as a sort of proof of his artistic laxity or non-seriousness. His perception in the eyes of many academic composers hasn’t been made any better by him writing symphonies based on Brian Eno and David Bowie (*Heroes Symphony* as well as the earlier *Low Symphony*, i.e. his fourth and first symphonies, respectively), by writing ensemble works with famous pop singers like Paul Simon, David Byrne and Suzanne Vega (in *Songs from the Liquid Days*, 1986) and by scoring countless movies and documentaries across the years. Most notable of these, perhaps, is the *Qatsi* trilogy by Godfrey Reggio, starting with *Koyaanisqatsi* in 1982 where a “close match between film and music” (Glass: p. 203) was achieved through intense collaboration between the composer and the film-maker.

We have seen that post-minimalism, while rejecting the purism and non-directionality of early minimalism to a large extent, still attempts to provide musical structure based on the repetition of cyclic processes and the addition of elements in a continuum of minimalist change. If there is indeed thematic development, it flourishes *within* the minimalist aesthetic. Lately, Glass himself has largely abandoned electro-acoustic experimental works in favour of orchestral works (such as soundtracks for movies) and world-music collaborations (most recently *Orion*, 2004). Still, as we have seen, his Ensemble not only continues to use electronic keyboards but also relies on highly sophisticated acoustic tricks both during performance (acoustics) and in the studio (mixing). More important than that, however, is the sympathetic relationship between Glass's aesthetics and the aesthetics of popular music (both acoustic and electronic). His penchant for *collaboration* has already been seen as one of the reasons for his success in the mainstream culture. Next I would like to look at some post-pop variations of post-minimalist aesthetics in post-modern electronic music.

### 3. Contemporary Variations

Of musicians influenced by Glass, Potter lists (pp.339-341) Cluster, Kraftwerk, Neu!, Tangerine Dream, David Bowie, Brian Eno, Giorgio Moroder, Donna Summer, Glenn Branca, Rhys Chatham and Richard D. James (Aphex Twin). This list is far from comprehensive, but it gives some idea. His influence, via these artists and others, is even larger than one might suppose. Considering this, and considering the constant interplay between 'high' and 'vernacular' electronic musicians (e.g. Carlos, Riley, Reich, Froese...), it is curious to find that in Petri Kuljuntausta's admirable book (2002) there is *not one* mention of Philip Glass in the index (a couple of pages are devoted to Steve Reich and Terry Riley each, and dozens of pages to Stockhausen). A number of reasons may exist. First of all, the focus here is on Finnish history and composers. Second of all, Glass is often taken as more 'acoustic' than 'electronic' (although, as we have seen, he was always both). Thirdly, and this is true, Glass's influence in 'purist' electro-acoustic circles has probably never been that great to begin with; interest in his work has been muted at best, hostile at worst. Fourthly, the mutual schism between the modernists (the post-Stravinskyans; Twelvetonalism; Serialism...) and the minimalists (Reich, Glass, Riley...) has perhaps never been fully healed, leading to difficulties whenever different 'schools' (be it those that developed under Boulez, Stockhausen, Cage or Glass) are brought into dialogue with one another. Clearly this is a case of 'friendly rivalry' of the sort experienced whenever two things grow very close to one another. Like siblings, these schools are always bickering... I will let this historical schism be and look, next, for some parallels between Glass and *new* electronic music.



There are two different approaches to finding parallels between the sort of minimalism represented by Philip Glass and the sort represented by contemporary electronic music. First method is historical, and it consists of asking the following questions: Which techniques influenced which? Which artists drew inspiration from which earlier artist? Who has heard, or been influenced by, Glass? In this crowd we may place the aforementioned rock and pop artists starting in the 70s (Bowie, Eno etc.), but we only have to consider the remarkable popularity of Glass's music in the mainstream culture since the 1980s in order to realize that very few Westerners have *never* heard Glass's music. In this sense, the cultural climate is heavily influenced, because saturated, by Glass's aesthetic. A far more interesting question, therefore, in my mind, is the question of non-linear influences; that is to say, *parallal developments* drawing from *multiple points of origin*.

The aesthetics of early electro-acoustic music – in *musique concrète* and in the German school under Stockhausen – drew heavily from serialism and the twelve-tone system. Yet we find simultaneously developing a parallel aesthetic in these very same electronic experiments, more as a result of empirical necessities (and technical constraints) rather than any ideological impetus. This we might call technophilia. Its subcategories, if you will, include 'tape-aesthetic' (the cut-and-paste method), 'electro-purism' (letting machines sound like machines, e.g. in *elektronische Musik*) and, later, 'synthesizer' and 'computer'-aesthetics (especially since the 80s). The constraints imposed on the composer by technical and technological processes and interfaces were never simply 'limiting', but they always opened up new ways of looking at music-making itself.

Knowing this, we may look at contemporary electronic music as it exists in the domain of popular and *avant garde* audiences. The history of 'popular' electronic music really only starts at the moment it becomes possible to produce music not only in rare, lofty studios (associated with university music departments and radio companies) but more and more outside of a controlled, academic setting. This coincides with the cheapening and mass-production of electronic hardware (and later, software). In the hands of the aspiring artists, the aesthetic of rock music fuses with the aesthetic of experimental electro-acoustic music, leading to an explosion of new pop, rock and electronic music applications. This history is too wide to account for here, but let us mention the German bands Kraftwerk, NEU!, Tangerine Dream and Einstürzende Neubauten. Out of this same environment develops what, since the 1990's, has been called minimalist techno, often associated with Germany and Northern Europe. The structure of recent minimalist techno artists' music, such as by *Monolake* or *The Field*, exhibits many similarities with the Glassian minimalism, with which it shares more than the name. It is called 'minimal' because of its limited array of instrumental or timbral variation within one track. We should remember that techno, as it started in Detroit and Chicago, has *always* emphasized rather minimal drum- and melody-patterning, but as it developed

during the 80s and the 90s, it branched out into many sub-genres, many of which were built around a certain rock aesthetic (e.g. big beat) or even a certain neo-classical melodic pomposity (e.g. trance). It is against these excesses of the DJ culture that minimal techno (as it is called) developed, focusing on a kind of idealized purity of song structure (comparable to early Glass). The focus may be on a slightly off-balance drum pattern combined with a drone-based hypnotic groove, as in Monolake's *Cern* (2002), or else the basis may be a slowly unfolding series of juxtaposed melodic-rhythmic patterns as in The Field's *Mobilia* (2007). The focus, in both instances, is on a minimally developing structure of hypnotic, pulsating and repetitive loops. Not without development, but also devoid of any 'verse-chorus' or 'exposition-resolution' formalistic constraints, minimal techno is a natural heir to something like Glass's *Koyaanisqatsi*, expressed in beat-oriented instrumentation.

Electronic music was not limited to Germany, however. Especially in the U.K. did many electronic artists become popular. Many sub-genres of electronica (e.g. ambient, techno and trance) incorporate, like both minimalism and serialism, mathematically rigorous (because electronic) processes of repetitive, unfolding structures. Techno, we should remember, is also influenced – again, like Glass's music – by Indian and African rhythms. One big name in British electronica, The Orb, was also early adopter of explicit minimalist elements; he sampled Reich's 1987 work *Electric Counterpoint* in his 1990 single *Little Fluffy Clouds*. More people, I would argue, are familiar with The Orb's version than are with Reich's original. Again, the vernacular and the 'academic' come together. Another explicit collaboration occurred when Philip Glass 'remixed' (or rather 'orchestrated' with slight variations) ambient and drum'n'bass artist Aphex Twin's piece *Icct Hedral* (1995) for the single release. In both cases, Reich and Glass, the composer was not only being (passively) 'sampled' unwittingly but actually (actively) sought or accepted collaboration. Reich later commissioned an album of DJ remixes of his music, called *Reich Remixed*. Stockhausen would never have done that, he was too much of a lonely artist and, let's admit it, old-school for that. In fact, on one occasion – contrast this with Glass's behaviour – Stockhausen accused Richard D. James (Aphex Twin), when asked about him, of composing "post-African repetitions" and urged him, rather condescendingly, to listen to his *Gesang der Jünglinge* so that he would stop writing "repetitive" beats. These very same "repetitions" (whatever their relationship to 'Africa') are, of course, the very core of minimalism in both Glass and techno, which is one of the main reasons why such a collaboration as the one between Philip Glass and Aphex Twin (not the most minimalist of electronic composers) is possible. In fact, this is what separates Glass and Reich (and much of contemporary electronic music) from Stockhausen and Cage (and from much of traditional electro-acoustic music): focus is on *continuity* rather than *separateness* across and between events. For

example, Cage's 'chance music' is antithetical to minimalism because of its reliance on non-repetition. Still, what is Cage's *4'33* if not the ultimate expression of minimalism as dada?

There are three more examples I would like to discuss. The first is a piece by Autechre, a British IDM ("intelligent dance music") duo, from 2005, called *Fermium*, which, in its slowly unfolding structure, demands a similar mentality on the part of the listener than does, I think, minimalist concert music. The approach of minimal development allows for the unfolding of superimposed sound layers in a kind of linear but self-transforming and self-destructing crescendo. Compared to Glass, there is considerable 'thematic development' here, so comparisons should be very careful. Still it is clear that there is a common ground between Glass and what Potter, rather clumsily, calls "music with a clear beat which also has a tune" (p.339). It might just be called music based on rhythm. My last examples are compositions by the present author, both written in 2007. The main software used in both is Reason 3.0, with additional editing done in Audacity. The first of these pieces is called *Verilöyly* and it is built around a short, looped sample of Eero Ojanen's 1960s song *Kolme Luotia Rudi Dutschkeen*. It unfolds in a very linear, incremental fashion. In the main section, there are two mutually enforcing, pulsating, slow-attack, slightly out-of-phase, ascending melody lines (programmed using modular software synthesizers) working in unison with the background's short, rhythmic strings and a few stable drum patterns. It is conceived as a waltz, in  $\frac{3}{4}$  time signature (though it has elements of  $\frac{9}{8}$  as well). It could be taken as IDM or techno or electro-acoustic sample-music. It was not made with Glass in mind, but in retrospect, it is clear that during that time I listened to *Einstein* and *Akhmaten* and there I must have found the inspiration for a linear, non-narrative and pulsating voice orchestration in odd (both in the sense of 'uneven' and in the sense of 'strange') time signature. The last 30 seconds of the piece (the heavily modulated breakdown sequence), though, owe nothing to Glass and everything to the European classics of noise modulation and granular synthesis. The last piece that I want to discuss is *The Orgoner 2007*, which was actually very much inspired by *Music in Twelve Parts*. It combines a drum'n bass beat structure with sequenced orchestration. In addition to different drums, it features sampled winds and strings: 1 violin, 2 clarinets, 2 oboes, 1 bass and some natural harmonics. The basic melody structure is perfectly cyclical, i.e. it doesn't have a clear beginning or an end, although it is firmly rooted in  $\frac{2}{4}$  time signature. The track unfolds as a dialogic interchange between two different sections, the one more cyclical, the other more linear and 'solo'-oriented; these two sections are not like chorus and verse because neither is dominant. The track has no intro, although it has a trill-coda of sorts. Post-minimalist techniques of repetition, cyclicity and unfolding of minimal processes are, then, well at home in experimental electronica, as these varied examples show.

## 0. Reintroduction (Conclusion):

We have come full *circle*, but we also have perhaps *added* something to the original idea. This is how post-minimalism works: *repetition* for the sake of *new* understanding.

We have explored Glass's development, from his early works through his operatic mid-period onto the 21<sup>st</sup> century. We have come to see his music, in both theory and practice, as heavily indebted to the aesthetics of electro-acoustic music; even, it seems, to certain reviled aspects of serialism. Moreover, he has been one of the first composers to take synthesizers to the opera hall. We have also traced his influences, both direct and indirect, across rock, pop and electronic artists of the last couple of decades. It has become clear that many aspects of contemporary electronic music are quite sympathetic to some of minimalism's tenets, although also very different and unique. Minimal techno, electronica and ambient all have certain things in common with Glass (and, also, Reich and Riley). Most of these connections have to do with a kind of 'exotic revival' (of African, Caribbean and Indian origins) characteristic of post-modernist music and post-modern culture in general. In bridging the gap between the 'high' and the 'vernacular', different musicians and musical styles have managed to revive some rhythmic modalities, long abandoned in Western tonality, which human beings, whatever their training and where ever their roots and origins, share.

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### **Cited Music:**

A - Steve Reich

1965: *It's Gonna Rain*

1966: *Come Out*

1974-76: *Music for 18 Musicians*

1987: *Electric Counterpoint*

1995: *City Life*

B - Philip Glass:

1971-74: *Music in Twelve Parts*

1975: *Another Look at Harmony*

1976: *Einstein on the Beach*  
1980: *Satyagraha*  
1982: *The Photographer*  
1983: *Akhnaten*  
1983: *Koyaanisqatsi*  
1986: *Songs from Liquid Days*  
1988: *1000 Airplanes on the Roof*  
1993: *Symphony No. 1: Low*  
1996: *Symphony No. 4: Heroes*  
2004: *Orion*

C – Other Artists:

John Cage: *4'33''* (1952)  
The Orb: *Little Fluffy Clouds* (1990)  
Aphex Twin: *Incubated* (*Philip Glass Orchestration*) (1995)  
Monolake: *Cern* (2003)  
Autechre: *Fermium* (2005)  
Otto Lehto: *The Orgoner 2007* (2007), *Verilöyly* (2007)  
The Field: *Mobilia* (2007)

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- Richardson, John: *Singing Archaeology – Philip Glass's "Akhnaten"*, 1999, Wesleyan University Press, University Press of New England, Hannover & London