On 21 July 2001, I attended the Philip Glass Ensemble’s performance of *Music in Twelve Parts* (1971–74) in Avery Fisher Hall; the performance was part of the Lincoln Center Festival for that year, which was devoted entirely to Glass’s music. I was struck by the contrast between the way in which the music was performed—the look of the performers, their dress, even the way in which they played—and the character of performances I had attended almost twenty years previously, performances that took place when minimalism was just beginning to make a strong presence in mainstream classical music venues. This contrast sheds some light on the history and reception of American minimalist music and, in particular, the stylistic shift that can be observed in much minimalist music composed after 1975.

In those older and arguably more exciting days, one had a sense that the minimalists were revitalizing classical music. I remember, in particular, a performance from October of 1983 at the Joseph Meyerhoff Symphony Hall in Baltimore, Maryland. Glass’s road crew—for there is no other way to describe it—hauled in a large and robust sound system which was so loud in performance that symphony regulars, unaccustomed to such forceful decibel levels, sought refuge in the back of the auditorium. The ensemble members were dressed colorfully and unconventionally, and while they lacked the flair that would come to characterize such younger new-music ensembles as the Kronos Quartet, their clothing certainly offered a refreshing change from the formal black attire that usually graced the Meyerhoff stage. And the instrumentation of the Glass ensemble was hardly one typical of classical music: amplified saxophones or flutes, amplified soprano, synthesizers, sometimes even a drum machine. In my mind, amplification and electronic instruments brought the Glass ensemble closer to the world of rock than to the world of classical music.

It was only in the performance style that we could detect that other, more demure world. The musicians showed almost no emotion: in deep but relaxed concentration, they were icily precise, so precise that their playing seemed strangely to belie the emotional immediacy of the joyous, tonal music. If their manner was calculated to ironically dis-
tance the audience from the music's content, one had little sense that they had succeeded. The audience, which filled the Meyerhoff to its capacity, was noisier and more enthusiastic than usual. It had as many students and leftover hippies as it did older, more conservative, and more moneyed denizens of Baltimore society. This was a time in which many people from different backgrounds felt as if they had been united into a single audience by an updated kind of high art music that could make contemporary classical music a vital, living force to a large, young audience.

By the end of the 1980s, however, it became clear to me that this hopeful vision for the future of new music was as naive as it was shortsighted. For one thing, the dissonant, complex music that many minimalist composers openly challenged in their work had continued. In the United States, Milton Babbitt—perhaps the elder statesman of the post-1945 modernist mainstream—had been awarded one of the prestigious MacArthur Fellowships in 1986. John Cage, then in his seventies, had found himself the avuncular guru of American experimental music, the recipient of many commissions, and the distinguished appointee of Harvard's Norton Professorship in the 1988–89 academic year. Some younger composers, mistrustful of minimalism's diatonic certainty, reembraced more complicated idioms as surely as some of their contemporaries essayed a watered-down, more user-friendly brand of the classic minimalist rhetoric.

And indeed, classic minimalism found itself slowly coopted by the sensibilities of the concert hall. Steve Reich composed a number of orchestral "masterpieces"—including the brilliant Variations for Winds, Strings, and Keyboards (1979) and The Desert Music (1983–85), which is probably his best-known orchestral work—before returning to a leaner, more idiomatic ensemble dominated by percussion. Around the same time, John Adams, then still a relatively unknown quantity, became beloved of symphony orchestras everywhere: after such shimmering, dramatic, and frankly emotional scores as Harmonium (1981) and Harmonielehre (1984), he settled into the more complex and chromatic idiom of the Violin Concerto (1991) and the Chamber Symphony (1992). Finally, Philip Glass, having established his reputation with a string of operas, from Einstein on the Beach (1976) to The Making of the Representative for Planet 8 (1985–88), began to turn his attention decisively to string quartets and orchestral music; in the latter genre, he began with cinematic program music like The Light (1987) and has since produced six symphonies.

All this history made its presence known in the 2001 concert. Clearly, the musicians were older: Glass used reading spectacles, and
Michael Riesman, Glass's principal keyboardist since 1974, had gray hair. The performers' sleek black attire was uniform and sophisticated but decidedly conservative; the keyboards and keyboard stands smartly designed and unobtrusive; the amplification clean and tastefully attenuated from the deafening levels of the past. And strange to say, though the performance lacked some precision, the musicians were more conventionally joyful than before. Minimalism, in short, had grown up and learned to "play nice" in the venues of classical music; the outsiders of the past had become as familiar, and as homogenized, as the Beaux-Arts Trio. True, the audience size showed no chance of filling Avery Fisher Hall to its capacity that evening, and perhaps the average age was, on the whole, older—but there were plenty of young people there, and the spirit of the audience seemed to carry a bit of its former vigor and enthusiasm. Indeed, something remained that reminded me of minimalism's capacity to irritate; a young student of mine who had come to hear the second half of the concert received his ticket from an elderly woman on her way out. ("Would you like my ticket? It's rather repetitive," she said.)

I do not mean to imply that these developments are unfortunate. I am still young enough to hope that the classical institutions, ossified and closed-minded as they can sometimes be, might yet find a way to reinvent themselves in such a way that new audiences are created without alienating the older ones, bringing generations together once again. But the future is by no means assured. Younger, smaller ensembles like the Bang on a Can All Stars, the Ensemble Modern, and Alam Will Sound seem to point the way decisively to a newer and perhaps more vital idea of "contemporary music" just as more and more symphony orchestras find survival increasingly difficult in today's musical marketplace.

Still, it gives one pause to note that Glass's music—and especially *Music in Twelve Parts*—should now find itself a classic so perfectly at home within the historicist tradition of the concert hall.¹ Has something changed? After all, in the notes accompanying the first commercial recording of the first two parts, the composer described his work in terms that suggest just the opposite:

The music is placed outside the usual time scale, substituting a non-narrative and extended time sense in its place. It may happen that some listeners, missing the usual musical structures (or landmarks) by which they are used to orient themselves, may experience some initial difficulties in actually perceiving the music. However, when it becomes apparent that nothing "happens" in the usual sense, but that, instead, the gradual accretion of musical material can and does serve as the basis of the listener's attention, then he can perhaps discover another mode of listening—one in which neither memory nor anticipation (the usual psychological devices
of programmatic music, whether Baroque, Classical, Romantic or Modernist) have a place in sustaining the texture, quality or reality of the musical experience. It is hoped that one would then be able to perceive the music as a "presence," freed of dramatic structure, a pure medium of sound.6

Glass's ideal of a static, nonreferential music was, for many years, taken as the de rigueur definition of his minimalist compositions. The idea was taken up at greater length, for example, in Wim Mertens's classic study of the American minimalists, which considers their work up to around 1980, and a shorter essay a decade later by Elaine Broad.7

By contrast, Jonathan W. Bernard eschews the characterization of minimalist music as static. He sees more kinship between the process-oriented character of early works by Riley, Reich, and Glass and the serial approach of such visual artists as Dan Flavin, Donald Judd, Robert Morris, Sol LeWitt, and others, in which the arrangement of elements produces gradual changes that are perceived either within an exhibition space (in the case of sculpture) or across the space delimited by a canvas (in the case of painting).8 However, Bernard reinscribes classic formulations of minimalism in his identification of the "problems with minimalism in music"—problems that, in his view, have perhaps accounted for the fact that minimalist music has not yet achieved the canonical status that minimalist art enjoys. Specifically, he sees the perception of "endlessness" in certain pieces as a detriment, weakening one's perception of a clear beginning and ending merely to the sensation of moments when the music starts and stops; and he suggests that minimalist composers no longer assume "that one will listen intently, with undivided attention, from beginning to the end of a work."9

It is somewhat ironic that Bernard speaks so authoritatively on the way audiences listen to minimalist music since, as John Richardson points out, his discussion hardly mentions the issues of "affect and reception" that have accounted for the broad audience appeal of minimalist music.10 Indeed, with the advent of recordings and repeated concert performances of Reich's and Glass's music in particular, listeners have become increasingly familiar with many minimalist compositions and—in spite of such radical pronouncements as Glass's above—the traditional roles played by memory and anticipation seem to play ever stronger roles in this music. In Reich's Piano Phase (1967), the addition of the pitch A midway and the gradual compression of the original rhythmic figure from twelve sixteenth notes to four create a powerful accumulation of intensity;11 likewise, listeners who have heard Philip Glass's Two Pages (1968) a few times cannot help but recall the work's opening when they hear the shattering return of all five pitches in their original configuration.
near the end of the piece. Later works, such as Reich's *Music for Eighteen Musicians* (1974–76)—pace Bernard—and Glass's *Einstein on the Beach* (1975, premiered 1976) have dramatic arcs even more traditional and powerful. Of course, the more conventional character of these later works has long been viewed as an indication of a stylistic shift away from minimalism. The composers have suggested that their music after 1974 or 1975 cannot be considered minimalist at all; writers such as Edward Strickland and Keith Potter have coined the word "postminimalist" to indicate this different music which, in Potter's words, recuperates the "melodic profile, timbral variety, and sheer sonic allure" that makes their music "richer and deeper." However, the successful cooption of *Music in Twelve Parts* into the concert hall points to the possibility that the seeds of postminimalism might be discernible in Glass's early music. Thus, the transition from minimalism's early, avant-garde stance to its present form, particularly in Glass's case, suggests—if you will pardon the pun—a more "gradual process" than previous scholarship has described.

To explore these connections, we need more clarity on Glass's early music than we currently have. Some continuing stumbling blocks make this study difficult. For one thing, many important works—above all the extensive body of music written for the Philip Glass Ensemble—cannot be rented for performance and remain generally unavailable for study. Even such simple matters as a reliable chronology for Glass's oeuvre remain a problem. For example, four important reference sources list the order of Glass's pieces in 1969 incorrectly, and the exact dating of such pivotal works as *Two Pages* continues to be somewhat controversial.

And extended studies of Glass's early music are few and far between. The most extended published essay on Glass's music, Wes York's study of *Two Pages* (1968), suffers from errors unwittingly brought about by York's preparation of the score that he used for his analysis. Potter's book has the most information on the early works, with generous analyses of many scores including the important *Music in Similar Motion*. Nevertheless, because Potter limits his study to Glass's avowed minimalist works (up to *Einstein*), he does not identify elements of Glass's early music that relate to his later, postminimalist scores. For example, within the four somewhat different pitch collections that articulate each of *Similar Motion*'s four sections, I find connections between Glass's minimalist and postminimalist music, connections that Glass himself confirms in his discussion of the work with me. Specifically, Glass remarks that his early music (previous to *Similar Motion*) had a uniformity of texture that precluded any sense of, in his words, "dramatic structure." With *Similar Motion*, however, he began to think of texture as a structural idea—surely a
move toward the dramatic structure that would become ever more central to his postminimalist concerns, and certainly a paradoxical statement in light of his observation that *Music in Twelve Parts* represented a music "freed of dramatic structure."

Another broad area of scholarly importance concerns questions of performance practice in this music. Up until very recently, the ensembles formed, respectively, by Reich and Glass were the only musicians performing the music, and the question of an appropriate performance practice for the music was largely irrelevant. However, many of Reich's earlier ensemble works—including *Phase Patterns*, *Drumming* (1971), *Music for Pieces of Wood* (1973), and *Music for Mallet Instruments, Voices, and Organ* (1973)—have been available for some time. A score and performing editions for *Music for Eighteen Musicians* and *Music for a Large Ensemble* (1978) are either published or in press, and a number of professional groups—including the Ensemble Modern and Bang on a Can—have released their own recorded versions of these or other classic Reich works. Happily, one can detect differences in performance style in multiple recordings of the same work—for example, *Music for Eighteen Musicians*—that allow us to experience a richness possible only when the composer releases his music for general performance.18

In the case of Philip Glass, however, only one of his ensemble works—*Music in Similar Motion*—can be performed outside his own ensemble.19 Even his works for more conventional chamber ensembles have not been widely performed by others. The reasons for this, I believe, continue to be largely financial. Glass, ever the adept musical businessman, realized early on that operas and large orchestral works offered the most secure rewards for future performances, since the composer could easily control the financial details for them by reserving them strictly as rental items. For the ensemble works, Glass has simply restricted the availability of the scores to his own ensemble, thus controlling the number of performances and the fee such a performance can command.20 There is, in addition, considerable reason to believe that the composer holds a sentimental attachment to the pieces, a conjecture that finds some support in his long-standing commitment to the Philip Glass Ensemble itself. When and if the ensemble works are released for general performance, the particular nature of that ensemble—whose keyboard instrumentation changed to reflect the explosive development of electronic keyboards between 1970 and the present—poses fascinating questions in the realm of performance practice. What instruments have been used for the Glass ensemble, and how were they used? What is the most appropriate instrumentation for this music, and how can it be realized?
The above questions principally motivated the two interviews here, which I conducted in 1991 as part of my own research into Glass's music between 1965 and 1975. In my interview with Glass, I wanted to discuss the background of his transition from unison pieces to ensemble pieces and the implications that this transition had for his thoughts about aesthetics and compositional practice; I wanted to clarify the chronology of the early works, which at the time appeared in various orders with various dates; I wanted to get a clearer understanding of the personnel and contributions of the individual musicians in the Philip Glass Ensemble (particularly with respect to the role of improvisation in certain works); and I wanted to gain more insight into the actual instrumentation of these pieces—in particular, the way electronic keyboards were registered—since the sound of the music on commercial recordings sometimes seemed at variance with the scores I had had access to and since the timbres of the synthesizers were hardly ever conveyed by the scores themselves.

In the course of that interview, Glass advised me to contact Michael Riesman regarding any questions about the actual keyboard instruments. Riesman (b. 1943), who joined the Philip Glass Ensemble in 1974 and continues as its music director, had a decisive impact on the sound of the Glass ensemble, not only because of his amazing virtuosity, but also because of his skills in programming and maintaining the various electronic keyboards that have been used during the ensemble's history. Riesman's close association with Glass's music also shows in his work as conductor for performances of Einstein on the Beach, Satyagraha (1979), and other works, and as conductor and coproducer for the majority of Glass's recordings. My interview with Riesman concerned the electronic instruments used by the Philip Glass Ensemble during the period 1974–76; we also discussed other instruments used in subsequent concert and full performances, with special emphasis on the revivals of Einstein on the Beach at the Brooklyn Academy of Music (1984) and the Stuttgart Opera (1988).

**Interview with Philip Glass, 8 October 1991**

*Rob Haskins (RH):* I am trying to trace if there was a definite break between when you first started doing unison works to works for more instruments. You described *Music in the Shape of a Square* [1967] as a duet. Was it distinctive in a particular way, or was there a reason you moved to unison music?

*Philip Glass (PG):* Bits and pieces.
RH: When you moved to writing just in unison, was there a motivation behind that?
PG: Yeah. I think so. The pieces that you referred to, like Music in the Shape of a Square and In Again Out Again for two pianos [1967], are pieces in which I was working with overlapping rhythmic patterns.
RH: In the same manner as the Play music?23
PG: Yes, exactly. It was an extension of that music. But I wasn’t satisfied with the structural rigor of this way of working. What came out of it seemed to me, at the time, too unplanned. It was too mechanical a process without any internally motivating structure to make it happen. So when I began to do the pieces like the piece for Jon Gibson (the solo saxophone piece) [Gradus (1968)] or Strung Out [1967], what I tried to do was to take the idea of rhythmic variation and structure and to reduce it to something that was more, let’s say, through-composed in a certain way. The difficulty with those pieces was that it took enormous numbers of pages to write the pieces out. Strung Out is fourteen to fifteen pages... Is that how long it is?
RH: Something like that, yes.
PG: Though I had been able to articulate an idea of rhythmic structure in a continuous way, I found that I had another problem, which was that the writing out of all this music simply was too tedious, and, in a certain way, it was also too tedious to perform. And that led to the idea of additive process, where I then looked for a more systematic way of developing rhythmic structure through variation, and I hit on the idea of addition. RH: And you used repeating figures to make the process more clear as well as to reduce the notational difficulties.
PG: Yes. The first ones were like Music in Fifths [1969]... basically, Music in Fifths is just... it’s really a unison piece, it’s just two unison pieces played a fifth apart. It doesn’t have any harmonic content to it. Music in Contrary Motion, in a certain way, is almost the same thing. Even though the left and right hands are moving in opposite directions, it still doesn’t have any... I don’t feel that the texture provides any dramatic structure to it. I was really going through very basic ideas of how rhythmic lines are associated.

With Music in Similar Motion, then it became possible to work with texture also as a structural idea. At specific points in the piece, when another line is added, that becomes a new texture, and it demarcates a new moment in the structure of the piece.

The next piece after that was Music with Changing Parts, where that idea was carried out in a grander fashion, perhaps. That was 1970. OK, does that help?
RH: Very much. Did, then, additive process begin with *One Plus One* [1967]?
PG: It began as *One Plus One* and then I applied it to the idea of ensemble playing.
RH: Is the music for *The Red Horse Animation*—
PG: Part of that? Yes.
RH: So that is a rhythmic piece?
PG: That's a piece that was rhythmically related to *One Plus One*.
RH: So when you talk about the floor in your book, the special floor, they actually tapped on that, and that was the music?²
PG: They actually tapped on it, and that's how... the performers used the floor as a percussion instrument.
RH: There are a number of lists of your works, and there are some differences between when you say pieces have been written.
PG: The problem is, Rob, I tend to forget when I wrote things and I tend to not write it down, so it depends on my memory, which is faulty. What are the problems?
RH: Well, your book says that *Two Pages*, for instance, is in 1968, and the photocopy that I have says "February, 1969."
PG: You see, another problem is that the date of copyright isn't the date of composition. Because what I did in those days, I didn't want to go to the trouble of copyrighting every piece separately, in those days, you could copyright six pieces on the same copyright form. So I would wait until I had six pieces together and then I would copyright them all together. So the copyright is different. I doubt whether *Two Pages* was written in 1969, simply because that would have meant an awful lot of pieces got written in 1969. That would have meant four big pieces. The four big pieces were *Music in Fifths*, *Music in Contrary Motion*, *Music in Similar Motion*, and another piece which was kind of withdrawn called *Music in Eight Parts*. That's enough for one year. So that leads me to think that *Two Pages* must have been the preceding year.
RH: Well then, the more difficult question is, What is the sequence of those big 1969 pieces? Is it *Music in Fifths*, then *Music in Contrary Motion*, then *Music in Similar Motion*?
PG: Yes, that's the order. And *Music in Eight Parts* comes between the third and the fourth piece, but it didn't survive.
RH: Because, you see, your book lists *Music in Contrary Motion* first in that year.
PG: I don't think so. I think it's the other way around.
RH: Because it didn't make sense to me.
PG: No, it doesn't. It's more logical that it was the other way, and, if nothing, I was logical at that time in my life.
RH: Now, regarding the long-held tones in *Music with Changing Parts*, was there a specific motivation to adding those additional textures?

PG: It was a textural idea. There were two considerations. One was to take a piece which was kind of theoretical and to add musical elements that would enrich it harmonically. The second part was to try and include—and I tried this several times (I still am trying to do it)—to include the idea of improvisation within a determined structure. Among the players I was playing with at the time were three saxophonists who were all very good improvisers, and they basically really wanted a little more freedom. I acknowledged that by trying to provide something in the piece where they could play out a little bit more. That was the expression they used—they called it "playing out." So in fact, the way they played out, I tried to keep it fairly, let's say, limited, but as a practical matter when we played, some of them just completely opened up and played wild jazz rhythms. It was very hard for me to keep them to the long tones. They rarely did stay to the long tones. That was my preference. And on the recording, there are more of the long tones. But there were performances that were completely wild, where they just kind of cut loose and left the keyboards to hold down the structure of the piece. And there was something to be said for that; I mean, I'm not sorry it happened that way, but it just wasn't my preferred way of doing it.

RH: So if you, for instance, prepared a final version of this score and published it, you'd very clearly . . .

PG: Well, I don't know; you know, I don't know whether I'd do that or not. I might just let other people figure it out. I'm not so doctrinaire, really, especially about early pieces. I must say there's a lot to be said for their idea. You know, it wasn't my idea, but my idea isn't always the best idea.

RH: Along those lines, then, in the improvisation in *Einstein*, you wouldn't necessarily have any strictures about that either?

PG: No, that's come to be fairly free and I've enjoyed that, actually. There's also another improvisation part in *Music in Twelve Parts*, in part 4—very much along the same lines.

RH: But in the recording it's so restricted it wasn't clear whether that was improvisation or not.

PG: It was.

RH: When did the number of players in the Glass ensemble become final?

PG: Well, it never changed very much from 1969 on. From 1969 we had three keyboard players and two or three winds. Dickie Landry and Jon Gibson and Richard Peck were the wind players (that was in 1970, I would say), and myself, there was a second keyboard player that was either Art Murphy and then later became Bob Telson, and later still it
became Michael Riesman. A little bit later, Martin Goldray joined the
ensemble as the third keyboard player. Now the only significant change
was that Joan LaBarbara began to sing with us in about 1971; that was
the introduction of a singer into the ensemble, and there's been a singer
ever since.

There've been transient players, people that came through. Let me
see... Barbara Benary [b. 1949] played for a little while, not very long;
she was a violinist and was in a group called Son of Lion, a gamelan
group. There was a trumpet player called Rusty Gelder that played
with us for a while. Robert Prado played trumpet with us for a little
while. Robert actually died in 1970; otherwise, he would probably have
continued. Frederic Rzewski played one concert, Anthony Braxton
played one concert. You know, people would come in and just sit for one
concert; I never considered them real members of the group. By 1971, I
no longer let people do that. The music required too much rehearsal and
it was no longer possible just to sit in. So between 1969 and 1970 there
were these people that would come in and play for a while, especially
pieces like Music in Similar Motion. By the time I was working on Music
in Twelve Parts, I no longer really wanted that.

RH: Let's talk a bit about the electronic keyboards. When did the syn-
thesizer bass instrument get added?

PG: That would have been the Arp bass. It was a monophonic instru-
ment. I think it came in around 1974, 1975. I was anxious to begin
working with synthesizers, but until really polyphonic ones became
available, they were just too limited. The Moog was too limited a key-
board to me, and it was uneconomical to travel around with one key-
board player who only played one line. So I preferred the Farfisas or the
big Yamaha double keyboard that we used for a long time. The Prophet 5
was the first synthesizer we considered acceptable. That began in
1975. I was anxious to do it; the technology was just a little slow in com-
ing. As soon as it was available, we began to use them. I guess it would
be 1975.

RH: I'm trying to figure out in the various sections of Einstein how to
describe the timbral range on the organs and keyboards that you used,
and I was wondering if you had any documentation of that.

PG: The person that knows about that is Michael Riesman, and I would
suggest you call him. He has been around for all of the recordings and
was responsible for most of the programming.

RH: In the Einstein score, there are a couple of places where the wind-
part doublings of the keyboards are different than the recording.

PG: Yeah, we changed it around. There's no real way. You have to look
at the parts to be sure. And the parts are probably the same as they are
on the recording.
RH: One gets used to the way the flute doubles one keyboard in Dance 1 and the new score has it with the piccolo doubling the other one.

PG: Yeah, my scores at that time . . . you know there aren't real scores at all, they're just parts. I never wrote scores out. Even *Music in Twelve Parts* never had a score; *Einstein* doesn't have a score. Even now when I write ensemble pieces, I don't write scores. I only began writing scores when I was working with opera houses and conductors, and they needed to have a score. I'm much more in that tradition of the baroque composers who wrote pieces out and handed them out and people played them. Sometimes I would decide to change a part and I would just write a different part. If the scores were collated later by someone else and they didn't have all the parts, they didn't copy them out right. We're talking much more about a performance practice than a compositional practice. The performance practice sometimes changed what the composition was. With the ensemble, that's still true. We still change things. There's simply no need to codify it, because there exists no other ensemble but my own that plays a certain repertory of music.

RH: There are, in the *Einstein* score, shorter repetitions indicated in pencil. I was wondering whether that indicated concert versions, or whether those were cuts you made in the score.

PG: That must have been cuts for the recording. We had to cut down for the recording. In performance, we play the full version.

RH: And the last question: there are a lot of sections within *Einstein* in which fairly recognizable patterns recur within movements. There's a sort of refrain, for instance, that recurs several times in the "Train" section [act 1, scene 1]. I was wondering how you wanted to relate the appearance of those kinds of correspondences to the earlier theory you'd laid out in *Music in Twelve Parts* where there's a gradual accretion of material and one doesn't become aware of memory and anticipation.

PG: I think I was thinking along different lines at that point. I know what you're referring to in the Train. There are certain patterns that seem like fundamental ones that begin. I think of it more, in a way, as starting points, rhythmic developments, and sometimes I'd go back to the same starting point. I don't really have any good reason to give for that, it just seemed to make sense in the piece that it had that compositional idea.

RH: Thanks a lot.

Interview with Michael Riesman, 30 November 1991

RH: What I'm after is a good working history of electronic keyboards in the Philip Glass Ensemble and some information about them. What instruments were being used when you joined the ensemble?
Michael Riesman (MR): We had two Farfisa Minicompact Organs. That was it.

RH: And the sounds the Farfisas produce are just multiple octaves?
MR: They had several stops. They had the 16-, 8-, 4-, and 2-foot stops in terms of the octaves, and then they had another, maybe, four switches for the tone generation—the sound quality. I don’t remember what the actual names of the switches were, but we had a couple of them turned on and a couple of them turned off. There was one called “String” that made the sound stringier, and that was turned off.

For most of the time that we used those instruments, we basically used just the one generic sound. We didn’t change stops or anything, with one or two exceptions. For example, when we did the music from North Star, the album that was put together from the music that Philip wrote for the film about Mark di Suvero, sculptor, that was one of the few times that I can ever remember actually changing stops on the Farfisa (for example, adding vibrato or changing the sound).28

But for the entire period that those instruments were in the ensemble, the basic sound we used was the basic sound that they made. It was a very fuzzy sound with a lot of overtones, similar to what you’d get on an analog synthesizer with the filter wide open on a sawtooth wave. In fact, we imitated the sound of the Farfisas when we did the recent recording of the complete Music in Twelve Parts.29 We remixed the recordings for the first six parts, which had used the actual Farfisas on them, and for the rest, we imitated the sound with a sampled Farfisa, Oberheim Matrix 6 Synthesizer, a Super Jupiter, and I don’t know what else. But, anyway, I imitated the sound very successfully just using synthesizer sawtooth waves.

RH: So when the one setting on the Farfisas was used, it was a setting which coupled all the 16-, 8-, 4-, and 2-foot stops?
MR: Yes.

RH: What was the next instrument you added?
MR: The next instrument that was added was a Yamaha YC45-D dual-manual organ. This was added at the time of Einstein on the Beach, so that would have been 1976. So for two years, anyway, and for the entire period before that, there were no other keyboards. Well, that’s not true. In Music in Twelve Parts, there was also an electric piano that was used, a third keyboard player. But other than that, there were no other instruments used.

Anyway, this Yamaha organ was capable of a great deal more than the little Farfisas. First of all, it had two manuals. It had percussive stops; it had a whole range of stops. There must have been a good thirty levers on the thing for different sounds.
On the lower manual, there was a limited range of things—16-, 8-, 4-, and 2-foot stops, and an in-between stop which sounded, I think, two octaves and a fifth above the principal note. There were one or two of those in-between stops on the lower keyboard.

The upper keyboard had, additionally, a number of other stops. It had, I think, about four percussive stops which added a percussive attack to the tone. One sounded two octaves and a fifth (or something like that) above the primary tone, and the others were 8-, 4-, and 2-foot percussive stops.

There was another control called "Attack" that I used quite a bit. It created a slight envelope on the note (like a percussive stop, but a separate stop), something that made the tones a little louder at their attack point. There was also on the upper keyboard a "String" stop that was quite bright, and a "Trombone" stop (something like that). I used these stops sparingly, but I did use them.

Also, the Farfisa stops were either on or off, but the Yamaha had continuous sliders for just about all of the controls, so that you could do very fine adjustments. So, during the whole rehearsal period for Einstein, I was tweaking the settings on that organ, because Einstein was a completely different kind of thing from anything we had ever done before.

First of all, it wasn't simply the ensemble just playing music, it was all different types of ensembles—voices and keyboards; solo voice and keyboards; keyboards and winds; winds, solo violin, and keyboards. There were all these different types of ensembles, so not only did the sound quality need to be varied, but also the sound levels needed to be changed depending on whether it was a full ensemble piece or, say, solo voice and keyboard, something like that. In my original score for Einstein, I had devised a sort of tablature for notating the settings for this particular organ, and it changed for pretty much every number in Einstein. In some numbers, it was very simple; I simply changed manuals or changed presets (there were a couple of presets that you could set up). And I arranged the progression of registration changes through the piece such that there would always be time to make them. But it was fairly complicated, and certainly very different from using the Farfisas.

But that was in the case of Einstein only. After that organ became an instrument that would go on the road with the Philip Glass Ensemble, the registrations would be much simpler, sort of reverting more to a basic registration that we would pretty much use for everything because of the more or less static nature of the Philip Glass Ensemble sound. 

RH: So your score of Einstein contains all of these various settings, but to a certain degree, they're no longer useful because that instrument is no longer being used?
MR: That’s right. We retired it. It traveled with us for about ten years. Actually, when we came back from Einstein, we didn’t immediately start using the Yamaha to replace the Farfisas in the ensemble, and in Einstein, it only replaced one of the Farfisas. We still used the Farfisa as second organ. But we continued to use the Farfisas in the ensemble concerts after that, because the Farfisas are much smaller and lighter, and because the Yamaha didn’t do that much for the Philip Glass Ensemble sound that wasn’t also done by another instrument that we got shortly after the Einstein tour, which was an Arp synthesizer.

We needed some way to be able to do the bottom of the ensemble differently, to put a real bass on them. The Farfisas didn’t have a real low end. The Yamaha had a longer keyboard, so you could play things down an octave; and it had a dual manual, so you could register two hands differently. The left hand could then become a separate entity with its own sound, and the bass could really emerge as a predominant aspect.

But when we got back from Einstein, we didn’t really want to start lugging that organ around, because it’s a monster—it’s big. So we got a little Arp synthesizer which was called the Explorer, Model 2600, I think. It was monophonic; this was still in the days before synthesizers had memory banks. It was a single oscillator, multi-waveform, and multi-octave synthesizer. It had stops kind of like the Farfisa; it had the 16-, 8-, 4-, and 2-foot stops, and it had multiple waveforms—square, sawtooth, sine, and pulse waves. You could select all of those at once if you wanted to, or combinations. And it had dual envelopes for the filter and the amplifier. But it was a device that was very small and compact, and could sit on top of a Farfisa comfortably, since the Farfisas were little flattop jobs.

So this little Arp synthesizer then joined the ensemble and became something that did the bass sounds that we sort of discovered with using the Yamaha YC45-D as a bass; that’s something we wanted to do.

We also added a Prophet 5 synthesizer to the ensemble around the time the ensemble started touring the music from Glassworks, about 1981–82.

RH: One more question about the YC45-D. There was a pedalboard on that instrument, too.
MR: Yes, that’s right.
RH: How often was that used in the Einstein score?
MR: It was used only in a few places. None of the score is actually written for two hands plus feet.
RH: I know it doubles the bass clarinet in “Night Train”; that’s easy to hear.
MR: We could have done that in the recording, but I don’t think we did it in the live performance that way. I used it in “Dance 2”; that was one
of the places where I used it. "Dance 2" has a drone that goes all the way through the piece on an A, so it was just a question of pushing down that pedal and holding it all the way through. I used it in the "Building," where I doubled the lowest notes of my left hand part with the pedal part, sort of kicking out the rhythms, but that was something I introduced myself, and that didn’t end up on the recording. I think Philip actually used to use the pedals to play the long tones at the beginning and the end, as well. I’m not even sure about that; he may have done that on a manual. The pedalboard had its own stops, but there’s a switch that you could use to assign the bottom keys on the lower manual of the keyboard to the pedal, so that you could have a separate registration for those; it’s just a one-octave pedalboard.

**RH:** Are those indications of when the pedal was used in the live performances actually indicated in your score?

**MR:** No, I don’t believe so. The score itself does not require a pedalboard, I’ll put it that way. Since the organ had one, we used it for a couple of things. For example, when I did the revival of *Einstein on the Beach* in Stuttgart two years ago, I didn’t use any pedalboard at all; there’s no need for it.

**RH:** Likewise, the indications of when it was used for the recording are also not written down.

**MR:** I don’t think we used the pedalboard at all in the recordings. We might have used it for Dance 2; that would have been the only one.

**RH:** Well, there’s a very low bass doubling the bass clarinet in "Night Train," and unless it’s the split capability, nothing else sounds in that octave.

**MR:** Yeah, but we overdubbed things in the recording, and I’m sure that’s how that got in there. I know we did some things with overdubbing some keyboards on that, so that was probably one of them, I’m sure.

**RH:** Was the rationale of overdubbing just to enrich the texture?

**MR:** Yeah, I think so.

**RH:** I have a few questions about the 1984 revival. By that time, you were using a number of different synthesizers. Which ones were specifically used for that production?

**MR:** Well, as I remember, we were still using the YC45-D organ in that production. We also used a Juno 106 synthesizer to do the bass, so the YC45-D became sort of a triple manual, and this is something that I’d been doing in the ensemble for a while. The Juno 106 is used as a bass instrument, resting on top of the Yamaha. The second keyboard station was replaced with a Prophet 5 synthesizer, and then we also had an Oberheim OBXA, and Roland JX3P. But the central tone generation was still that same Yamaha YC45-D.
RH: Is there any documentation of those programming patches?
MR: Well, there's documentation in the sense that there are cassette tapes that have the patches loaded onto them, so we can recover them. There's documentation of what patch was called up when in the score, but there's no other documentation. You could reconstruct it if we hauled out the same instruments. We could load them up with the sounds, call up the music, and reproduce it. That's the only sense in which there's documentation.

For the Yamaha sounds, there's the tablature that I devised to notate the registrations, so that could all be reproduced, too.
RH: And then you led a production in Stuttgart in 1988. What did you use for that performance?
MR: For that performance, we used two Yamaha TX802s and two Oberheim Matrix 6s, driven by a couple of Roland MKB-300s.
RH: And documentation exists for those patches? They're probably on a librarian program?
MR: Those are actually on MIDI floppy disks. Yamaha made a little librarian for programs that was a very small disk drive. That's where those are. Once it became possible to do everything with MIDI and saving stuff by MIDI dumps, that was a big step forward in convenience. I never documented any synthesizer patches by showing where the knobs were except for the original Arp Explorer, which had no other way to document that. But once synthesizers developed memories and cassette saves and loads, I didn't ever bother actually notating the positions of knobs or anything after that.
RH: In future performances of Einstein—and I don't know whether any are planned or not—would you reproduce your "orchestration" for the Stuttgart production?
MR: Well, for the Stuttgart, I started from scratch; I didn't use any kinds of tone generators in that production that had been used in any of the previous Einsteins, so I just had to start from scratch on that one. I did attempt to make it sound like it had sounded before—something like it—while also doing a few things to make it sound better than it had before, given the fact that I had a more flexible synthesizer apparatus to work with than I had used before.

The prior Einsteins had been pre-MIDI; the Stuttgart Einstein was post-MIDI, so I think that was the big change that happened there. I was able to use combinations of synthesizers, which is what I do now all the time. I almost never use a single synthesizer to make a single sound—I'll use an FM synthesis module plus an analog synth module; or an FM synth plus a sampler; or an analog synth plus a sampler; or all three, sometimes.
RH: I guess what I’m trying to determine is whether you view the Stuttgart reorchestration as a move toward a more definitive version, or whether you’re still working on that.
MR: Oh, well, I’d say it’s a more definitive version in the sense that I have a feeling that the sound generators that we used for Stuttgart will be around for quite a while, and are very popular. Therefore, you could replicate it in the future.

We are going to do another revival of Einstein on the Beach, interestingly enough, in 1992—in Spain, Japan, Europe, South America, and the United States, as it stands now.

RH: And you’ll start with the Stuttgart version but you’ll probably improve on it, I suspect?
MR: I think we may very well use the same version. I was very satisfied with the Stuttgart sound, and I think we may use virtually the same instrumentation of FM synth modules—TX802s, say—and analog synth modules. Anyway, it’ll be pretty similar.

RH: And similarly, the different sounds are stored via MIDI dumps, and the scores indicate where the changes take place.
MR: Well, the sounds are archived by MIDI dumps. All the sounds that you’d need are on board the synthesizer for the show, so you just call up the different programs. The Matrix 6 has one hundred memory slots and the TX802 has sixty-four random memory slots, so that’s plenty of memory. There are not that many sound changes in the piece.

RH: It’s a very interesting issue, because, of course, the electronic keyboards give Einstein such a distinctive sound, and yet, if you look at the score, the score is almost transparent by comparison—it doesn’t indicate at all the richness of sounds. I think there’s more interest in understanding the sounds of the instruments themselves. Unfortunately, many people who are using electronic instruments are not, perhaps, as careful about authenticity as you. They don’t need to be as careful about it because it’s almost a pop music product for them; and in pop music, the goal is continual novelty of sounds, not a situation where there’s a real ongoing repertory of older sounds.

MR: Along those lines, actually, one of the biggest programming jobs I did was when we retired the YC45-D organ in 1986, transferring all of the registrations from that into other devices. When it was retired, it was replaced by a TX rack (six TX802 modules) and a Roland Super Jupiter synthesizer, which is an eight-voice polyphonic analog synthesizer. That was what I was handed by our sound designer, Kurt Munkacsi, who said we had to retire the Yamaha. We retired it for physical, mechanical reasons; the thing had just taken a beating for too many years on the road. The sound guys had to have the cover off before every show because it
was full of hundreds of little delicate wires and stuff, and it was just getting too fragile.

So he said, Here, use this, and purchased TX modules in a TX rack and the Super Jupiter. I then used three TX modules on one side of the Super Jupiter (which is a splittable synthesizer) to replace one manual of the Yamaha, and another three TX modules and the other side of the Super Jupiter to replace the other manual.

And everyone said, Gee, it's a much better sound; it's much cleaner, it doesn't have the uneveness of the Yamaha. So that was a very successful transition, but it was a lot of work to try to imitate a rather unique instrument with synthesizers, and got me into the nitty-gritty of FM synthesis programming. I guess you could say that's been a specialty ever since—imitating the sounds of other things like, for example, the Farfisas and acoustic instruments as well (say, for when we do the showings of the films with live performance). That was a big changeover when, finally, the last of the old-fashioned instruments in active use—the Yamaha—was retired.

**Notes**

1. Of course, one can easily identify parallels in performance style to such synth-pop bands as Kraftwerk and Gary Numan, where the sense of distancing seems more overt. The complex interactions between these different musical communities deserve a more thorough treatment than I can provide here.

2. In a symposium at the Eastman School of Music on 17 Feb. 1999, Reich indicated that his musical inclinations were more amenable to smaller ensembles and that he would concentrate on this medium in his future work.


4. "Low Symphony" (1992), Symphony no. 2 (1994), Symphony no. 3 (1995), "Heroes" Symphony (1996), Symphony no. 5 (Choral): Requiem, Barlo and Nirmanakaya (1999), and Symphony no. 6, for soprano and orchestra (2002; Plutonian Ode). Jeremy Grimshaw discusses Glass's symphonies (with particular attention to the "Low" Symphony) in his article "High, Low, and Plastic Arts: Philip Glass and the Symphony in the Age of Postproduction," see pp. 472–507 in this issue. I thank him for making a copy of his essay available to me.

5. The previous complete performance of the work, in 1990, also took place at Avery Fisher Hall.


12. In fact, Jeremy Grimshaw, who has worked extensively on the music of minimalism’s founder, La Monte Young, believes—as I do—that the antiteleological characterization frequently given to Young’s works strictly applies only to his installations and some of his conceptual works.


15. Nevertheless, to be sure, Glass has maintained a long-standing commitment to help scholars—including young doctoral students at colleges, universities, and conservatories—to undertake projects concerning his music. One of the most recent is Glenn C. Lemieux, “‘Music in Twelve Parts’ by Philip Glass: Reconstruction, Construction and Deconstruction” (Ph.D. diss., University of Iowa, 1999). There is no systematic study, however, of Glass’s music between 1965 and 1967, the period just preceding the breakthrough he achieved with the application of additive rhythm as a structural principle in his music.

17. Wes York, “Form and Process,” in Kostelanetz, *Writings on Glass*, 60–79. The analysis is problematic because York based it on his own transcription of a recording of the work that made cuts in the piece so that the recording would fit one side of an LP. York’s rendering of the rhythmic patterns into quarter notes obscures certain motivic relationships in the work (Glass’s notation is in eighths), and his discoveries about proportional relationships of the various sections in the work are suspect because he apparently did not realize that the recording contained cuts. An extended analysis is provided in Potter, 288–92.

18. Alan Pierson, conductor and artistic director of the ensemble Alarm Will Sound, has edited two of Reich’s works—*Music for a Large Ensemble* and a new chamber orchestra version of *The Desert Music*—and is in the process of preparing a study that deals with questions of performance practice in Reich’s music.

19. Even in this case, one receives a copy not of the ensemble version of the work, but rather of its 1981 chamber orchestra arrangement, which includes a performance note that the score can be adapted to any instrumentation.


22. Thanks to Jeremy Grimshaw and Payton MacDonald for their comments on this article, and to Cat Celebreze of Durvakén Music for her kind assistance in obtaining permission to publish the interviews.

23. In 1965, while Glass was still in Paris, he composed incidental music for a production of Samuel Beckett’s *Play*. It consisted of short shifting patterns for two saxophones twenty seconds in duration, which alternated with twenty seconds of silence for the entire duration of the play, some twenty minutes. As Glass relates, I saw [Play] ten or fifteen times. The thing that struck me was that there would be an epiphany ( . . . a heightened feeling) that would occur as I watched the play. It would happen several times throughout the course of the evening and at a different time every night. I thought this was very curious. My usual experience in the theatre was that the epiphany was built-in to the play so that it would always happen at the same time. . . . Now it’s obvious to me—ten or twelve years later—what was going on but at the time I had no idea. I was in the presence of a piece of work which I couldn’t enter in any way through simple identification. . . . Moreover, it seemed that the moment I gave up trying to be the thing that I was looking at, the possibility of emotion arising spontaneously between the two of us, that possibility arose.


25. She built the instruments for Son of Lion in 1974 and, in 1976, cofounded the ensemble with Philip Corner and Daniel Goode.


27. A score of *Einstein* was prepared for the 1984 revival of the work at the Brooklyn Academy of Music and subsequent productions.
