

# A Musical Miscarriage: Philharmonic Hall and the Soundscape of Midtown Manhattan

by Josh Hudelson

"I've always said the problem with the acoustics here are comparisons to Carnegie Hall."  
-- Zarin Mehta, Executive Director of the New York Philharmonic, 2004

Avery Fisher Hall is set to undergo substantial changes to its auditorium, and this certainly won't be the first time. Between its original construction in 1962 and the tearing down and complete rebuilding of its auditorium, the hall saw seven separate attempts at re-imagining, redesigning, and reworking.

In all cases, the reasons for the renovations are said to have been purely acoustic. As for the renovations planned for 2010, things are not so clear. The lede of a 2004 New York Times article announcing the project claims that the need for an "acoustically improved auditorium" has been a critical part of the decision. But paragraphs later, the executive director of the Philharmonic is quoted as saying "It's not just the acoustics," and the rest of the article focuses on other aspects of the plan: aesthetics, socializing in the foyer, rehearsal space, and even the possibility of an additional performance space, without further mention of sound quality.

Now more than ever is an apt time to investigate the factors that play into any decision to renovate a concert hall. Now, that is, before it's too late. One can imagine a retrospective look at this upcoming construction that would file it away along with the rest of the renovations as yet another attempt to fix a broken hall, or, inversely, yet another step closer to a perfect hall. One can imagine historians writing a history of the hall from the standpoint of acoustical improvement just as easily as one can imagine it being written from the standpoint of aesthetic and social-function improvement. Either way, however, the narrative would miss the connection between the two—something that surfaces in the aforementioned New York Times article, which tries, but does not quite, come up with an explanation for the *need* for renovations.

If this connection can be overlooked today, one must ask if it has also been overlooked in the past and particularly in the writing of Avery Fisher Hall's history. What if the accepted view—that Avery Fisher Hall's previous renovations were all made in the name of acoustical improvement (best illustrated in the New Yorker article from

1974)—is a product of deceptive hindsight? How would this realization affect a view of the present-day renovations that are about to take place?

This paper attempts to argue that a multiplicity of social, economic, historical, and cultural factors play into the construction and evaluation of arts institutions. In this case, Avery Fisher Hall was the locus of major ideological differences between two central forces influencing the midtown Manhattan music scene in the twentieth century. While the science of acoustics may be quite real, its deployment is always political. Arguments in favor of one type of sound over another carry ideological baggage. Implicit in the proper way to hear music is a proper type of person to hear it and the propriety of certain styles of music and performance. Thus, acoustics becomes a scapegoat and the battle is fought quietly behind soundproof walls.

In *The Soundscape of Modernity*, Emily Thompson expands R. Murray Schafer's definition of "soundscape" to include the culture that interprets the sounds of a given environment. A soundscape, she says, "...is simultaneously a physical environment and a way of perceiving that environment; it is both a world and a culture constructed to make sense of that world." (2) Thus, (similar to Avery Fisher Hall) any soundscape "...is constantly under construction and always undergoing change." (7)

Thompson's book traces the development of the modern ear from 1900 to 1933. It follows the connections between developments in concert hall acoustics, noise abatement law, and electroacoustic technology. The way these fields have transformed the modern-day listener is fascinating. The only problem is that the direction is one-way and fairly smooth, whereas Avery Fisher Hall is an example of the opposition to, and ultimate reversal of, this process. Therefore, it is important to add to Thompson's definition to make it relevant to this paper. A soundscape is *also* the battleground of various forms of listening and sound-making, and as such, the direction of a soundscape's development is never one-way or set in stone. Resistance to changes in a soundscape can be as powerful as the change itself.

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Looming in the background of the construction of Philharmonic Hall was the next-most-recently constructed concert auditorium in New York, Carnegie Hall, which at

that time was nearing its seventieth anniversary. The association was not merely temporal or geographic; the New York Philharmonic orchestra was leaving Carnegie to move to Philharmonic Hall, with all its historical baggage in tow. Newspaper articles giving updates on the planning and construction of Lincoln Center never failed to compare the two halls. On May 10, 1959, *The New York Times* ran a story titled, “2,400-Seat Philharmonic Hall Set for Lincoln Sq.” which put forward the plan of the hall as a done deal. “It will be another month before the Metropolitan [Opera House] plans are as definite as those for the Philharmonic,” the article said.

A letter to the editor followed shortly on its heels, decrying the proposed seating capacity. J. Arthur Leve wrote, “To me it is hardly a tribute to the architects’ ability to admit that they cannot accomplish at least the same results that obtain in Carnegie Hall, where there has never been a complaint at any time regarding the acoustics.” This sentiment was echoed in other spheres, and eventually forced a last-minute change in the plans.

According to Max Abramovitz and Leo Beranek, the original architect and acoustic consultant of Philharmonic Hall, the decision to have a capacity of 2,400 was based on a combination of factors, including acoustics, comfort, and zoning regulations. Abramovitz, who had visited many European concert halls in preparation for his work on the Philharmonic, and Beranek, who had published a book-length study of the acoustics of halls across the world (*Music, Acoustics, and Architecture*), both believed that 2,400 was acoustically the upper limit for a hall—specifically, a hall intended for orchestral and chamber performances—lacking electrical amplification. That Carnegie Hall could handle a larger audience was due to the fact that it did not have to deal with issues of “larger chairs and stricter safety.” (Beranek, “Music...” 33) It was *not* about the superiority of its design. In an oral history from 1990, Abramovitz concurred along these lines.

**Remember, Carnegie hall had been built a long time before, so I had to be more spacious to follow the present codes and also, as somebody had discovered, the seats of people had gotten bigger; they needed more space. (134)**

But still, Carnegie Hall was the default standard against which to measure Philharmonic Hall, and this was a sore point for Abramovitz and Beranek. In a *Times*

article by Arthur Gelb that followed the opening of the hall, Beranek is quoted as saying, “There is a changing concept in sound...A modern concert hall needn’t sound like a hall of 1850. In my personal opinion, Philharmonic Hall is brighter and more reverberant than Carnegie.” While Abramovitz, in his oral history, did not go so far as to laud the hall above Carnegie, he was dismissive of the small-mindedness of the committee considering designs for the new hall.

**What they did is, they went to Carnegie and got the sizes of the toilet rooms and the sizes of the existing stairs and the existing foyers and the size of the space inside, and the back space. Somebody else figured out what you needed by measuring everything in the old opera house. At that time, since I was under pressure, I just took the time to go to Europe and started looking at many, many other halls.” (116)**

In spite of their plans, the final number of seats in the original Philharmonic Hall was not 2,400. According to Beranek, the hall was, “...the victim of changes made after the initial design,” (“Music...” 33) which accounted for its poor acoustics early on. Abramovitz, likewise, claimed that the board of Lincoln Center panicked at the thought of not living up to Carnegie Hall—not to mention the problem of having less income from fewer attendees—and demanded that additional seats be installed. The final number of seats on opening day was nearly 300 more than had initially been planned.

But the story so far has not quite captured the complexity of the situation. First of all, it was not universally believed that Carnegie hall should be the standard, and later critics would admit that certain types of music sounded better in Philharmonic Hall. Further, when Carnegie Hall itself underwent renovations in 1987 the reactions were similar to those given of the original Philharmonic Hall, namely, that the sound had become “harder, more brilliant, less engulfing, less powerful...” (Vaughan, “The Full Potential...” 395). As will be seen later, this coincidence leads one to question the veracity of acoustical judgments. One must wonder: does the reworking of a hall’s sound lead to a modernized status, or does the modernization of a hall lead to a changed perception of its sound?

But to continue on this line of thought—that Carnegie Hall held a tenuous position in relation to Philharmonic Hall—even Beranek was less than exulting in his book’s analysis of Carnegie Hall. After quoting various conductors who gave it mixed

reviews, he summed up by saying that its most obvious feature was “its ability to remain in the background—it seems to urge you to pay attention only to the performance.” (147)

Coming from Beranek, however, this is something of a mixed blessing. On the one hand, it speaks little to the actual construction and quality of materials of the hall, but on the other hand it is fully in keeping with the emphasis on audio clarity that had been developing at the turn of the century.

This is where things get tricky, because, according to Carlos Moseley, the managing director and later president of the New York Philharmonic, Beranek was of this new acoustic/aesthetic ilk. In an oral history from 1991, Moseley said,

**“I think Leo Beranek at first was astounded at the criticism, because I think he found that the sound met with his requirements. I think he must have had a hi-fi sound in his head, but that’s not what musicians aim for; a hi-fi sound and a “musician sound” are two different things.” (66)**

This difference, or rather, the perception of this difference, is a point that will be returned to. It lies at the center of the question of what gave Avery Fisher Hall its public character and how the major historical forces determined its renovation.

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During the period of the worst criticism of the hall, Max Amramovitz asked the President of Lincoln Center, William Schuman, what he thought of it. Schuman was, at first, “quite loyal” to the hall’s acoustics, but eventually he hinted at a larger force at work in his opinion. As Abramovitz tells it,

**Then one day he said, “You know, Max, I’m a hard person to talk to about this.” He said, “I know this music so well that I hear it in my ears even if they’re doing it wrong, or they could do it better. It’s in my ears already.” (151)**

Familiarity with music—and the inability to hear it any other way than one has heard it before—is a common experience, no doubt. But in the case of Schuman, it had resonances wider than just his personal experience. As president, Schuman set the tone for the purpose of Lincoln Center, and nowhere did he more clearly define his goals than in a 1962 essay titled “The Responsibility of Lincoln Center to Education.”

While he never outright claimed that Philharmonic Hall itself would have an educational mission, he made an eloquent and strategic report that effectively, if not officially, did just that. He began the essay by running through a list of composers and conductors—many of them the emerging names in American music at the time, such as Henry Cowell, Virgil Thompson, and Leonard Bernstein—who would start off the first season. Next he mentioned the development of the Lincoln Center Teachers Institute, the goal of which would be to focus more on musicianship and skill than on the “pedagogic” aspects of music education, which are not entirely clear. In essence, “however gifted a teacher may be, if he or she lacks the requisite attributes of the musician’s craft, there will exist a void.” He topped this off by saying that “Nowhere else in the world known to me does music play so important a part in the general curriculum as it does in this country.” (37)

The “void” of which he spoke was not simply metaphoric. It was also the physical void of the concert hall: the space that music fills and the sound that the space returns. In choosing to announce the upcoming performances and then the creation of the Teachers Institute, Schuman was, however delicately, making an equation. The role of sound in the concert hall would match a philosophy of education—specifically, the direct transmission of musical knowledge—not stuffy “pedagogy”—from teacher to student in an environment of democratic openness and public uplift. For Schuman, the open-ended creativity of American youth—as narrowly defined as one might find this in retrospect—was of tremendous importance to the larger public good. In his own words,

**To set the stage not for great art alone, but for the steady support of creative manifestations in any child, youth or adult, our schools should get beyond the dull, the safe, the orthodox. Any excitement lost to our schools will be lost to our communities ten times over.” (38)**

This ties in neatly with Schuman’s comment to Abramovitz—that the music is “in [his] ears already”—in the sense that the acoustic character of Philharmonic Hall was subordinate to the transmission of its sound as an educating force and a public good. The music was already in Schuman’s ears—which is to say that it was already in his brain—and that’s where, he believed, it was supposed to be. Carlos Moseley’s opinion that Leo Beranek’s Philharmonic hall was a Hi-Fi environment is germane to this point. Hi-Fi, in its strict definition as a favorable signal to noise ratio, can be heard in Schuman’s call for

a music education stripped of the noise of old-school pedagogy, orthodoxy, and other limitations on creativity and the direct and democratic transmission of knowledge.

Interestingly, Abramovitz's philosophy with regard to architecture was nicely in step with Schuman's philosophy of education. In a 1969 publication titled "Designing for the Performing Arts" Abramovitz discussed the issues at stake in designing a "performing arts complex."

**The ultimate success of this type of arts center is based on a vital and interlocking program which is constantly alert to the needs and interests of its users. This can encompass the many settings of dramatic presentations that are possible today, from that of the proscenium to varieties of the round, and all the musical performances from the instrumental or vocal soloist to the symphony orchestra and the musical drama. (25)**

This emphasis on the multiple roles of the complex and its flexibility with regard to the needs and potentials of the community, was echoed in his declaration that "An exciting center, if it is healthy and vital, will also be involved in many different educational and experimental programs," (25) and likewise in the importance he placed on the value of social interaction. "Lobbies and meeting spaces were designed for flowing interchange between students, faculty, and the community." (27) In that article, Abramovitz's focus was on The Krannert Center for the Performing Arts, which he completed before starting work on Philharmonic Hall (and for which, interestingly, he consulted Cyril Harris, the acoustician who later spearheaded the renovation of Philharmonic Hall, on the acoustics).

In his oral history, Abramovitz made further comments that reveal a philosophy of social function underlying his architecture. His comments concerned Philharmonic Hall specifically.

**Instead of doing what we do in New York City—that is, you go home, get dressed, get in the subway or a taxi and go to the opera or to the Philharmonic—I found out that people in England going to the concert hall would go from their offices directly to the bar and restaurant at the Festival Hall, and then when the bell rang, they'd go into the hall and make a whole damn evening of it and enjoy themselves...You also saw, in some of the large halls, especially in Vienna and the Paris Opera House, elaborate foyers where you met everybody and dressed in a festive manner. There was almost as much foyer space as there was theater space." (116)**

Perhaps the most obvious feature of Philharmonic Hall are the ceiling-high glass windows on every level, which create a sense of permeability between the courtyard outside and the interior of the hall.

**There's a wonderful photograph that Time, Inc. sent me...When they took photographs, they were in the central plaza and they showed everybody looking through the windows and walking through the windows, and it was all just a gay, light thing. You ought to see that photograph. That's a very nice photograph of the human part of it; the feeling of festival and no privacy...that you were part of it even if you were anybody a couple of blocks away. (171)**

A third player in the history of Philharmonic Hall who shared what might be called the “Hi-Fi Ethic,” was Avery Fisher, the founder of Fisher Radio and the man who made the renovation of the hall possible. In spite of this, Moseley has said that Fisher couldn't hear anything wrong with the hall to begin with.

**I took him all over the hall, upstairs and down, to listen to the orchestra's sounds. He refused to believe me...Now, I'm not sure but that Avery, who is a very worldly-wise public relations man, may not have been faking it. It's the only way I can explain it. (71)**

But perhaps it's not hard to understand that the life-long maker of high-fidelity sound equipment would be acoustically at home in a concert hall that Moseley described as “hi-fi.” Likewise, Fisher's wish to give back to music fits the bill for William Schuman's ethic of arts education. Whatever their differences, Schuman, Abramovitz, and Fisher all seem to have taken a similar philosophical stance with regard to the place of music in society and how that music should engage with the ears of its audience.

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Of all the players whose oral histories were collected by the Lincoln Center Archives, Carlos Moseley spoke the most openly about the actual social change that was taking place within the audience of Carnegie Hall. As he told it, the typical Carnegie Hall attendees at the time were precisely what one might expect:

**...musically knowledgeable, loyal music lovers. Some had been subscribers for decades, the children of long-time subscribers. There were many of central European background who had come to this country within our lifetimes who were steeped in musical life and traditions and who knew their scores.” (83)**

Standing out starkly against this group of established music-lovers was a younger generation which, according to Moseley, was less knowledgeable about music history and more interested in being part of a scene.

**“By the time we came to the hall, there began to be a change in the nature of the audiences. There was an influx of people who had not been concert goers and of people who came because they wanted to be in on the new Lincoln Center excitement, and people who were fascinated by Bernstein in his many manifestations.” (83)**

Whether Moseley is right that the scene mattered more than the music to the new audience members is disputable, but there is no doubt that Leonard Bernstein played a significant role not only in creating a new flock of listeners, but also in bringing a different ethos to the concert hall—an ethos that, yet again, is more closely allied with that of Schuman, Abramovitz, and Fisher than a more traditional, class-based notion experience of classical music. For a community as entrenched in a specific practice of listening as the one Moseley describes, Bernstein’s decision to make the concert hall also a forum of discussion and education—a move very much in the spirit of Schuman’s vision for Lincoln Center—was disastrous.

**“When Bernstein began to talk to the audiences on Thursday evenings, great numbers of people were drawn for the first time to symphonic concerts. They were eager to hear what he had to say. His remarks were often controversial, they were talked about, they were written about. As that happened, some of the middle European audiences especially began to withdraw from the Philharmonic; they would go where they would just hear a straight concert. Some of them changed to other subscription series of the Philharmonic where there was no talking.” (84)**

The dismay felt among the more traditional concert-goers was no doubt exacerbated by the fear that one of classical music’s central institutions in New York, not to mention the country, might be on the brink of demolition. This made it all the more important that Philharmonic Hall be able to replicate the experience of Carnegie Hall, and all the more frightening that it might instead further the shift already taking place among the ranks of concert-goers.

But that’s not how things worked out. The next part of the story is well-known—the hall was a flop in the press. The following ten years saw numerous attempts to ameliorate the acoustics with minor construction projects. According to Moseley, “...after each step was completed, the press at first expressed affirmative reactions for the most part,” (68) which were later followed by reinvigorated criticisms (the conductor George Szell, who despised Beranek, compared the insignificant improvements to the

removal of a couple of warts from a lame, hunchback, and cross-eyed woman).  
Philharmonic Hall was, for the time being, cursed.

Enter Cyril Harris. Harris is widely considered the man who saved Philharmonic Hall, and the rave reviews that followed the reopening attest to this.. But given all of the confusion mentioned above (the fact that reviews were often mixed and that some of the people closest to the hall could not hear its deficiencies) it is worth asking what exactly Harris did to the hall, and what it meant to the people who were to hear it.

To hear Harris tell it, the fault for the original construction lay entirely with Beranek for not being up to speed on the science of acoustics. Speaking about the founder of modern-day acoustics, Wallace Sabine, Harris says,

**...his formula for reverberation time is still widely used in auditorium design. Unfortunately, his formula does not always apply. For example, it didn't work in the original Philharmonic Hall, which is one basic reason that auditorium was acoustically unsatisfactory. (10)**

But Beranek had not been blind to these developments when he worked on Philharmonic Hall. In fact, his scientific understanding of acoustics, expressed in his book and his article, matched Harris's. Another culprit mentioned by Harris is Beranek's use of an adjustable ceiling to modify the acoustics of the hall based on what sort of music is being played. According to Harris, "My feeling is that none of the great halls of the world have ever had adjustable acoustics and I do not make use of adjustable acoustics in concert halls." (14)

This is an interesting view, especially for someone who spent his youth building radios with spare parts gleaned from the nearby Warner Brother's studio. It smacks of a certain kind of purism beholden specifically to classical music. And yet Harris was not one to deny that different types of music required different types of venues. His work on a concert hall in Bombay, for example, taught him that "...Western musical standards for acoustics could not be applied to Indian music." (27)

But when it came to Western music itself, Harris believed that Western musical standards applied with unfailing rigidity. The way that music should sound in an orchestral setting was not something up for debate. It was deeply rooted in tradition and even the biology of the human ear. Harris is quoted in a New Yorker article as say, "The human ear naturally prefers smooth decay." It continues later,

**For years, Harris has been saying that an acoustical consultant should try to design a concert hall...for what he thinks audiences want to hear...In Harris's opinion, the kind of sound that fulfills those requirements is a constant as old as the modern orchestra. He does not believe that it has been affected by high-fidelity equipment and the prevalence of recorded music in the home.**

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The reconstruction of Philharmonic Hall is said to have changed the acoustics of the space tremendously. The resulting sound was hailed as by critics as “sumptuous,” “warm,” “full,” “voluptuous,” and “lively.” These were ways of describing an effect that Harris had been aiming for all along: the ability to *feel* the music in the floor and around oneself, the feeling of being engulfed in sound. Recall Moseley's description of the older generation of concert-goers being “steeped” in music history. Similarly, the sound of Harris's auditorium was a habitat in which the audience temporarily dwelled.

This sound, while it lacked no clarity in comparison to that of Beranek's auditorium (indeed, it was even more clear), could not be called “high-fidelity” in the way discussed earlier in this paper. With Harris, the emphasis was on the environmental power and all-around evenness of sound, and the ideology that this carried was radically different than Beranek's.

What exactly was that ideology? In the introduction to *Music Downtown: Writings from the Village Voice*, Kyle Gann provides an analysis of the midtown Manhattan music scene which, if dubious and oversimplifying, provides at least a valuable working myth for the story in this paper. In contrast to uptown composers (whose Serialist efforts were supported by Columbia University) and downtown composers (who hosted experimental events in Soho lofts),

**Midtown composers seemed to revel in dressing up to the gills for world premiers, trading public and effusive compliments with the performers, and generally setting their music off in a make-believe world that imitated 19<sup>th</sup>-century conventions of patronage and royalty...[they were] desperately trying to live a life that no longer existed, or persisted only artificially. (4-5)**

So there was clearly money in this group, but also a goal toward which this money was put: namely, the upkeep of an increasingly fragile canon of musical works and audience practices. The midtown response to developments in American music was to, “...pretend

that nothing had happened.”(7) Carnegie hall was the primordial American space of this fantasy. And for all the difficulties that such a fantasy brings, the funds were enough to keep it alive for a long time.

The renovation of Philharmonic Hall was a high-profile example of this desire to maintain a space for an outdated soundscape. Considered in this way, it is more appropriate to drop the term renovation and call it a rebirth. Or better yet, a re-birth, literally: a birth back to a previous era.

Since then, a trip to Avery Fisher Hall has also always been a trip back in time. But this may change with the upcoming plans for more renovations in 2010. With Carnegie Hall at no risk of being demolished, the demands of Moseley’s concert-going regulars may be well-enough appeased for Avery Fisher Hall to see a new era in its acoustics, not to mention its programming. On the other hand, the latest generation of concert-goers may be more entrenched in the 19<sup>th</sup>-century utopia that Gann describes than every before. Either way, it will be a good while before we know.

The story of the birth and rebirth of Avery Fisher Hall, when it is told by *The New Yorker*, for example, or other publications, may be a simple tale of conflict and resolution. Perhaps it the conflict between science and the imprecision of acoustical knowledge. Or perhaps it is the conflict of a new scientist’s theory with that of his predecessor’s. Or perhaps it is as basic as the conflict between people doing something and failing and other people doing the same thing and succeeding. But in all of these cases, the players are well-defined and their problems are visible. With music, on the other hand, nothing is ever so cut and dry, and to tell it in such a way is to lose sight (or rather, sound) of the very substance under consideration. Most people may be willing to admit that there is a big gap between acoustics as measured by scientific instruments and acoustics as we hear them in our ears. But the more important gap exists between what we hear and what we think we hear, what we heard yesterday and what we remember hearing, what we wanted to hear and what we thought others intended us to hear.

In the case of Avery Fisher Hall, the conflicts that arose between the various players cannot be easily explained away by saying that they held different ideas about what good sound was. In fact, the problem was that they had *similar* ideas (or at least described them similarly)—both wanted sound that did justice to the music being played,

that transmitted it faithfully and in an appropriate way to an audience that was receptive of it. The dispute was rather the place of *music* in society. Where music fit into the lives of New Yorkers would then determine the appropriate conditions of its transmission. One camp wished to give music a place alongside the other humanizing sciences as a force of social uplift and education. The other wanted to keep music sacrosanct and preserve its history and class-related functions. In no moment were these views ever stated openly; they were fought along a scientific—and therefore putatively neutral—front. While the renovation of Philharmonic Hall was hailed as a triumph for acoustics, the real triumph was for a specific ideology of sound and, by extension, society.

### Works Cited / References

Abramovitz, Max: “Designing for the Performing Arts,” *Journal of Aesthetic Education*, Vol. 3, No. 1 (Jan. 1969), pp. 25-30.

Abramovitz, Max: “Oral History,” *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun June 20, 1990.

Beranek, Leo L.: *Music, Acoustics, and Architecture*, John Wiley and Sons, 1962.

Beranek, Leo L.: “Music, Acoustics, and Architecture,” *Bulletin of the American Academy of Arts and Sciences*; Vol. 45, No. 8 (May, 1992), pp. 25-46.

Beranek, Leo L.: “Oral History,” *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun Oct 4, 2001.

Bliven, Bruce: “Annals of Architecture, A Better Sound,” *The New Yorker*; November 8, 1976.

Fisher, Avery: “Oral History,” *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun June 12, 1990.

Gann, Kyle: *Music Downtown: Writings from the Village Voice*, University of California Press; 2006.

Gelb, Arthur: “Acoustical Remedies Set for Philharmonic Hall,” *The New York Times*; Sep. 25, 1962, pg. 32.

Harris, Cyril M.: "Oral History," *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun Dec. 18, 1990.

Kirkpatrick, Ralph: "On Concert Halls: Conversations with Ralph Kirkpatrick," *Perspecta*; Vol. 17 (1980), pp. 92-99.

Leve, J. Arthur: "Capacity of Philharmonic Hall," *The New York Times*; May 23, 1958, pg. 24.

Moseley, Carlos: "Oral History," *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun May 22, 1991.

Muschamp, Herbert: "Lincoln Center's Next Big Production: Itself," *The New York Times*; Jan 21, 2001, pg 2.1.

Parmenter, Ross: "2,400-Seat Philharmonic Hall Set for Lincoln Sq." *The New York Times*; May 10, 1959, pg. 1.

Pogrebin, Robin: "Philharmonic to Give Home a New Interior," *The New York Times*; May 20, 2004.

Schonberg, Harold C.: "Work to Begin This Week on New Philharmonic Hall," *The New York Times*; Dec. 2, 1959, pg. 1.

Schuman, William: "The Responsibility of Lincoln Center to Education," *Music Educators Journal*; Vol. 49, No. 1, pp. 35-38

Schuman, William: "Oral History," *Lincoln Center for the Performing Arts, Inc. Oral History Project*; begun July 10, 1990.

Taubman, Howard: "Science or Luck?" *The New York Times*; May 11, 1958, pg. X9

Taubman, Howard: "That We May Have Art," *The New York Times*; May 14, 1959, pg. 24.

Thompson, Emily: *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933*, MIT Press; 2002

Vaughan, Denis: "Orchestral Sound in Concert Halls – 3," *The Musical Times*; Vol. 122, No. 1657 (Mar. 1981), pp. 167-169.

Vaughan, Denis: "The Full Potential in Orchestral Sound," *The Musical Times*; Vol. 130, No. 1757 (Jul. 1989), pp. 395-399.