

AMICA International

Automatic Musical Instrument Collectors' Association

Honor Roll

Conlon Nancarrow

by Al Werolin

From the AMICA, Jan/Feb 1983

AMICA's Board has approved Honorary Membership for Conlon Nancarrow, a present-day celebrated composer who creates altogether unique music for the Ampico Reproducing Piano.

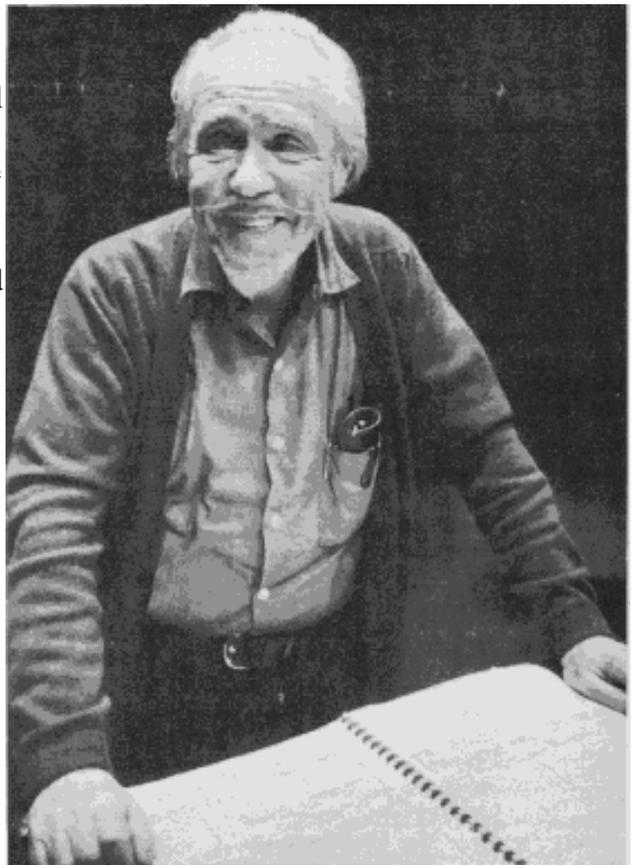
This picture was in an article in the September 12, 1982 issue of Newsweek.

Years ago Mr. Nancarrow composed music in the conventional way, but found little interest in his instrumental compositions. He turned, then, to a new and thoroughly personal medium. He began composing for player pianos, developing complex rhythms through the piano rolls, which he painstakingly punched by hand in paper, note by note. He has now composed over 45 "Studies" for the piano and has written out all the pieces in score, some of which have been published. He now uses two upright Ampicos in composing and recording his original music. His compositions are available on rolls and on Arch records and tapes.

In 1981 Mr. Nancarrow received the American Music Center's Letter of Distinction in Music. In '82 his music was played at the ISCM World of Music Days festival in Austria, and he gave a performance, using the Ampico,

at the Cabrillo Music Festival in California. His music is often used by modern dancers such as Merce Cunningham.

He was born in Texarkana, Arkansas; studied music at the Cincinnati Conservatory and also in Boston; and at one time played both classical and jazz trumpet. He now lives in Mexico City.



We are pleased to welcome Conlon Nancarrow into AMICA. Our International President; Terry Smythe, calls him "a musical pioneer of the eighties." He is contributing in a most unique way to AMICA's field of interest.

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Conlon Nancarrow, (1912-1997) was born in Texarkana, studied composition from an early age, (with Slonimsky, Sessions, and Piston privately in Boston) and played jazz trumpet in local bar bands. He joined the Lincoln Brigade and fought Franco's fascists in 1930's Spain, also becoming a member of the Communist Party.

Upon his return to the USA, he resumed composition, and associated with other new radicals in the New York scene, including John Cage and life-long friend Elliot Carter. Nancarrow's political leanings gradually attracted the interest of the state, and he was refused a passport upon application in 1940. Nancarrow moved to Mexico City, home until his death of heart failure at age eighty four.

Early performances of his highly complex work were failures, often due to incompetent musicians, and his attempts to relaunch his compositional career ground to a halt in the (understandably) underfunded and ill-equipped Mexican contemporary music scene of the day. Frustrated by years of indifference and incompetence, Nancarrow withdrew from 'normal' musical circles, and, inspired by the writings of Henry Cowell, ordered an Ampico Reproducing Piano and the required hole-punching equipment for the pianola rolls. The player piano became his sole musical outlet, and he wrote over 50 'Studies' exclusively for the mechanical instruments until a sudden explosion of commissions in the 1980's and 1990's saw live musicians once again tackle his formidably polyrhythmic works.

His history of writing impossible music ('post-performer music') did not fade, and one of the high points of his late-period recognition was a series of collaborations with instrument builder Trimpin, whose computer-controlled percussion ensembles were the ideal realisation of some of Nancarrow's most challengingly extreme scores. Trimpin's work with Nancarrow was an appropriate culmination, recalling Nancarrow's own 1940's attempts to build mechanical percussion instruments, and also maintaining the grinning dadaism of the player-piano works, (one of Trimpin's ensembles is an 'orchestra' of tuned wooden shoes).

As has been remarked by Nancarrow scholar Kyle Gann, Nancarrow had perhaps the strangest career of any known composer. It was strange in a subtle, dadaist way, not the brash 'craziness' of rock or jazz figures (or indeed figurines). Whilst we often laud the achievements of great 'performers', Nancarrow's music has remained hidden, obscure, like the patient and diligent character who produced it.

Given the method and manner of his work, it is no surprise that where he is considered at all, he is considered another unusual, even brutal 'American original.' Nancarrow's music is, however, perhaps some of the most significant of the century. What kind of music would prompt Ligeti to rave: "This music is the greatest discovery since Webern and Ives... something great and important for all music history! His music is so utterly original, enjoyable, perfectly constructed but at the same time emotional...for me it's the best of any composer living today." It is clear that Nancarrow's music remains profound.

Ligeti's remark "perfectly constructed but at the same time emotional" is utterly accurate. This fusion of what are elsewhere often aesthetic opposites is the remarkable characteristic of the sum of Nancarrow's music. It is a product of his exploration of polyphony, and polyphonic perception.

Nancarrow's limited instrumental means dictated a set sound-world. Although he did occasionally have the hammers inside the pianos modified, in order to achieve a more percussive or mallet-like sound, essentially he dealt with the specific characteristics of the pianola: metallic, sharp and thinly reverberant. However, he somehow managed to coax a remarkable depth and breadth of sound from the aged machine(s). It has been

speculated that the room in which all original recordings of the 'Studies' were made significantly affect this depth. Early (for instance 1970's) recordings are overwhelmingly dynamic, while the later WERGO recordings are more close-focused, but less dense.

The sound breadth, however, is heard in the ear. One of the more interesting examples of immediate textural polyphony is 'Study no. 20.' Nancarrow employs small, repeated motifs in different registers, gradually building to a spinning plane, with no specific moment of climax. His gentle introduction of phrases, and use of repeated notes at specific octaves, with attendant specific dynamics allows the listener to latch on to small relations, small connections. These structures gradually vary, and new echoes are heard in lower registers. Smaller and smaller changes occur, growing away from the abstract introduction. But the ear (or rather the brain) 'remembers' key notes, key phrases. When new voicings appear, we continue to hear the original phrases... as if the music remains bouncing around inside the piano and then off the walls.

'Study no. 20' is also a clever exploration of duration-perception, with Nancarrow playing with the ear's sense of 'expectancy.' Again where we 'heard' notes from before, now we 'hear' notes filling in 'registeral gaps', (bass-lines seem to continue, chordal events hang in the air). Nancarrow's music is concerned with this complex game of perception, setting up expectations, or producing useful and intriguing event-sequences from seemingly disparate and coolly abstract elements. These perceptual explorations function because of the unique space Nancarrow constructs. And the main demarcations of this space are his unique approaches to rhythm, harmony, and style.

Some of the 'Studies' employ not only odd-time signatures, but also dense polyrhythms and shifting tempos. 'Study no. 37' for instance employs twelve different tempos for twelve different voices. Other studies use strongly contrasting but interlocking phrases, usually with the unifying central pulse implied but never stated. Even in pieces that use few voices (or 'parts'), the rhythmic complexity is intense, for instance 'Study no. 18.' But there remains a unique 'groove' to it all, a jazzy, almost flamenco-like syncopation, evidently due to Nancarrow's affection for jazz trumpet (and jazz pianists such as Art Tatum and Earl Hines) and the music of his now native Mexico (he became a citizen in 1956).

Harmonically, Nancarrow retained a constructivist interest in bitonality and polytonality, (few of his works can be called tonal), and a serial 'Study' does exist. However, with the method of the player-piano focusing so much of his attention on repetition, unusual harmony or melody became less of a concern (remember that few of his studies last more than 5 or 6 minutes, and even that could take a year to write and hole-punch). Kyle Gann reminded me that, like Cage and Partch, Nancarrow was forced to 'jump-ship' in the post-war / post-serial harmonic clearing ground. New forms of experimentation were required, not the formalised predictability of serialism.

His harmonic experiments, like their rhythmic counterparts, force a new attention to interrelated events, but they also allowed Nancarrow to indulge his jazz fantasies. Gann: "I think Conlon started off with a case of "jazz envy." The early studies give the impression that he wanted to make jazz, but didn't have the right training to do it in the conventional way. He played jazz trumpet, but didn't have the personality to put together a band, nor did his musical education prepare him to write chord changes. The player piano gave him a way he could make pseudo-jazz, and justify it by including things too fast and complex for any jazz pianist to ever achieve. Besides, jazz was a more exciting direction than the serialism music had been moving toward when Conlon was still in the U.S."

Many of those early 'Studies' are glorious example of the young-ish Nancarrow trying to find a middle-ground between Stravinsky / Bartok-like linearity, and jazz velocity and harmonic sensitivity. '1,' '3d' and '7' are excellent examples of his surreal versions of jazz forms and orchestrations, while '12' is an ecstatic extrapolation of flamenco / Latin themes and scales, all given a dadaist shove into polyrhythmic heaven. Nancarrow's humour also appears in many 'Studies,' with '3a' and '3e' being terrifyingly fast and often atonal 12-bar blues jams. (I

have visions of attendants at genteel soirees staring wide-eyed at the man as these freak-outs tumble out of the pianola!)

The true quality of Nancarrow's harmonic sensibility is to be found in the 'fully-formed' sound of his phrases. He writes with the authority and velocity of a jazz soloist, playfully orchestrating the group around his line. He was able to incorporate the power of atonality and the evocative logic of melody, and he even managed to incorporate noise (cluster chords, mistake noises) and mock-effects (some pieces use ultra-fast repeated notes like a primitive kind of echo). His harmonic and orchestrational skill is perhaps most evident in the later live-musician-realised pieces, which draw out the clever touches that often hidden by the potent shock of the pianola-only recordings. Great 'Studies' like 'no. 7' finally reveal their big-band heritage, while Nancarrow's late works for musicians like 'Piece no.2 for Small Orchestra' confirm his undiminished awareness of actual instrumental interplay.

Nancarrow's early pieces are affective, even rather touching ('2' and '6' are astonishingly beautiful pieces of music, with hints of, dare I say it, sentimentality). But Nancarrow's late work remains the most intense, authentic and fully realised. It seems that as musicianly realisation seemed less and less likely (the early 'Studies' occasionally sound as if they were stop-gap pieces), he began writing works that more fully utilised the idiosyncrasies of the player piano. Some of those early Studies were arranged for the Ensemble Modern (best known for their work on Zappa's *Yellow Shark*) by Ivor Mikhashoff, (with orchestrational suggestions from the composer). Mikhashoff noted of the later work "they were conceived directly for the player-piano, presenting melodic lines that extend over six or seven octaves, beyond the range of a single instrument, and rhythmic complexities that are unconductable".

The later works deal with deeper issues than simple 'impossibility.' There are works for multiple player pianos, both synchronised and unsynchronised, works with very complex levels of polyrhythmic temporal ratios, works with the same section being played simultaneously at different tempos, etc... They incorporate unique touches, such as monstrously large chords, ludicrously fast glissandi, impossibly accurate tuplets and repeated lines. The pianola's dextrous rendition of 128th notes mocks mere musicianship. But in dense works like 'Study 40a' or '41c,' these obscure effects zoom past the ear then slide into a sudden reference to a bebop phrase. Giant chords pound out passages of atonality then logically evolve into a flamenco-esque progression. Touches of jazz, flamenco, dixieland, Stravinsky and blues continually out of his music. Why is this so? Again, it returns to ideas of polyphonic perception.

For all the ultra complexity, much of the music is rooted in a personal, referential language, since all of his experimental methods were aimed at exploring polyphonic perception, not as ends in themselves. The composer James Tenney described Nancarrow's work as employing an 'event polyphony.' Thus while there is constant simple polyphonic activity, for instance just two interlocking lines, ultimately there is a polyphony of passages, of structures, of compounds of events, and perhaps even a stylistic polyphony.

Nancarrow drew in disparate elements and evolved a method that logically and fluidly span out a transformative music. He does not use style as a support, but instead subsumes those personally resonant references (jazz trumpet, barrelhouse piano, flamenco-like strums) into a fully developed and unique music of his own. It is a music that can only increase in significance.

The hole-puncher required to perforate pianola rolls was an old and tough mechanism. Adult male visitors to the Nancarrow home report struggling to even make the usually automatically-driven device even budge. But Conlon Nancarrow spent almost his entire adult life manufacturing these amazing rolls. His patience produced a hugely muscular forearm, and a body of work of astounding intensity and importance.

by Tom Rodwell (August 1999)

CONLON NANCARROW, ON A ROLL

New York Times, October 25, 1987 - Contributed by Dick Price

Story by Larry Rohter

STRING QUARTETS he composed 40 years ago are being dusted off and performed for the first time. The MacArthur Foundation has favored him with a "Genius grant," encouraging him to experiment further with his spiky, uncompromising music. A leading German recording label wants to record, for the first time, his complete works for piano.

After decades of struggle and neglect, Conlon Nancarrow is finally being recognized as one of the major American composers of the 20th century. But the composer himself, who turns 75 on Tuesday, continues to live and work much as he has since he first arrived in Mexico more than 45 years ago; quietly and modestly, far from the mainstream of contemporary classical music.

"I've finished a string quartet on commission that's going to be performed in Europe next year, and I've just started writing a concerto for piano and orchestra that is going to be a very big work," Mr. Nancarrow, amused but pleased by his change of fortune, said during a rare interview at his home here one recent rainy afternoon. "People are finally coming to me. I don't have to go to them."



If the truth be told, Mr. Nancarrow, born in Texarkana, Ark., but a citizen of Mexico for the last 30 years, has not always been easy to find. He is a gentle and grandfatherly figure; his reputation is that of the mystery man of modern music whose isolation is as much a result of choice as of circumstance. Even now, as acclaim finally descends on him for his pioneering work on the player piano, he remains much better known to his fellow musicians than to the concertgoing public.

The composer and conductor Gyorgy Ligeti, for instance, calls Mr. Nancarrow's work "the greatest discovery since Webern and Ives" Since first coming across some of Mr. Nancarrow's piano pieces in a Paris record store in 1980, he has vigorously championed Mr. Nancarrow's jagged and elaborately contrapuntal music, both from the podium and in print.

"His music is so utterly original, enjoyable, constructive and at the same time emotional," Mr. Ligeti has written. "For me, it is the best music by any living composer of today."

Mr. Nancarrow also has acquired, much to his surprise, something of a cult following in the pop music world. The guitarist and composer Frank Zappa, whose own work reflects Mr. Nancarrow's fondness for dense textures and multiple interweaving melodic lines, says he has been an ardent admirer since 1967,

when he was introduced to the composer's work by Jimi Hendrix's recording engineer.

Mr. Zappa said that what initially struck him about Mr. Nancarrow's work was "that the mechanics of design are often more important than their relation to normal harmonic concepts" With the passage of time, he added, his appreciation for Mr. Nancarrow's "unique spiritual build and expression of character, his willingness to take chances," has also grown.

"In terms of individualism, I think he ranks up there with Webern, Stravinsky, Varese and Schoenberg;' Mr. Zappa said in a telephone interview from his home in Los Angeles. "There's been nothing like him before or after."

Mr. Nancarrow's musical and personal odyssey began in the small-town South, where he grew up absorbing jazz, blues and other American music styles whose influence can be detected in his work. As a young man set on a career in music, he said, he enrolled in a Cincinnati conservatory "for one semester, but it wasn't what I wanted, so I dropped it. I was looking for something a little less academic, I guess."

While studying music during the day, Mr. Nancarrow was often playing music, any kind of music, at night. He said that even though the bulk of his work is written for the keyboard, "my first and only instrument is the trumpet," which earned him his livelihood for several years.

"I played everything, odds and ends in all kinds of groups;' he recalled as he sat in his living room, stroking a pet cat. "In Cincinnati, I even played in German beer halls;" and as late as 1936, after he had committed himself to composition, he found himself performing in a dance band aboard a cruise ship bound for France

"Louis Armstrong was one of my idols, of course, and still is," Mr. Nancarrow said when asked about music that impressed him in his formative years. "I think he was one of the greatest. I have an enormous collection of records, old 78's of Louis Armstrong, Bessie Smith, Earl Hines."

Mr. Nancarrow said that he had continued to "keep track of things like Ornette Coleman and Cecil Taylor;" and also enjoyed some of the recent work of Steve Reich, but that he paid more attention to Indian and African music. "What I find interesting there is mainly the polyrhythms and the polytempo, which you really don't find anywhere else that I know of except in my own music."

In the early 30's, Mr. Nancarrow moved to Boston, where he began to study counterpoint with Roger Sessions. He intended to become a conductor, and through the W.P.A. got a job leading a community orchestra in a Boston suburb. It turned out to be a valuable lesson, but not in the way he had anticipated.

"I discovered that I didn't have the personality," he said. "I had the musical knowledge, and I guess even my technique was all right, but I was too easygoing. In order to be a good conductor, you have to be a bit of a tyrant. I know: I've been under some, and I've read about plenty others."

When the Spanish Civil War broke out, Mr. Nancarrow enlisted in the Abraham Lincoln Brigade because "I thought it would be a good thing to defeat Franco." But when he returned to the United States in 1939, "they wouldn't give me a passport" to replace the one he had lost. Fearful of political persecution as a "premature anti-Fascist," he decided to leave the United States; over the next 40 years, he visited the land of his birth only once.

"Without a passport, the only two places I could go were Mexico and Canada, and Canada just didn't appeal to me;' he explained. "It's too cold, for one thing. There was a huge Spanish Republican exile community here, and the Mexican Government just opened the door."

For many years after his arrival in Mexico, Mr. Nancarrow said, he went about his work with "zero reaction from the music world." Though in recent years he has been able to earn an adequate living from his music, he did "odds and ends, like translating and teaching English" to support himself when he first came here. Later, a small inheritance from his father enabled him to devote all his time to exploring a fascinating but overlooked corner of music.

Though he has written for ensembles as small as a trio and as large as a full orchestra, Mr. Nancarrow's influence and reputation stem primarily from his work with the player piano. It is an instrument that most other musicians regard as obsolete, but for 40 years Mr. Nancarrow has used it to compose music so complex in rhythm and so dazzling in speed that it seems beyond the ability of mere humans to play.

Mr. Nancarrow's player piano works range from canons with expanding rhythmic values to even more abstract experiments in aleatoric *Music*, with a few slower and more lyrical pieces

thrown in for variety. If there is one distinguishing characteristic that binds all the music together, he said, it is the unusual "threestep process" by which he composes.

"I draw whole piano rolls of just divisions, with no notes, just tempo relations in proportion, and then transfer those to music paper," he said as he stood alongside a pair of vintage Marshall and Wendell player pianos in his spacious home studio. "Then I compose a piece of music on the paper where I have already written the relationships, and then, since the rolls are already drawn out, I punch those notes out onto the piano roll."

As Mr. Nancarrow himself explains it, he initially turned to the player piano not in a flash of inspiration, but out of sheer frustration. Around 1940, when he was first seeking to establish himself as a composer, he said, he was plagued by musicians "who either couldn't or wouldn't" play the music he was writing with live performances in mind.

"I remember when I came back to New York after the Spanish Civil War and wrote a piece for a septet," he recalled. "It was a little tricky, a little difficult, but the musicians were all good musicians, from radio stations or whatever, and there were three rehearsals.

"But when it came time to play it, a couple of them lost their place right at the beginning and I said, 'Oh no, this is silly: "

When he came to Mexico, things were no more encouraging. In one instance, a clarinetist "refused to play something I had written because the public would think he was playing wrong notes." Faced with such resistance, he said, "finally I just decided I would use the player piano."

"I wanted to hear my music, for one thing, " Mr. Nancarrow added, stroking the white Van Dyke beard that gives him an avuncular and aristocratic appearance. "I'd never heard it played. Some composers are pianists and can at least play their music on piano, but I couldn't do even that, because I am not a pianist."

Because of the overtly mechanical sound that characterizes his player piano compositions and his willingness to experiment with irrational tempos and abstract concepts of rhythm, Mr. Nancarrow is sometimes called the "father of electronic music." He dismisses that designation as generous but mistaken; nevertheless he acknowledges a kinship with younger musicians who have been drawn to the synthesizer.

"If electronic music had existed when I started this whole thing of player pianos, I would have gone into that instead, because it would have been a lot simpler," he said. "The player piano is a tremendous amount of work, punching all those holes by hand, one by one, hundreds and thousands of them."

Mr. Nancarrow, and his wife, Yoko Sugiura, an archeologist born in Japan, have a 16-year-old son who plays synthesizer in a rock band here, and the composer has become a fan of state-of-the-art electronic devices such as the Synclavier, which he calls "a fantastic instrument." But he says that "at this stage, at my age, I'm not going to start learning a whole new technology."

Instead, in recent years Mr. Nancarrow has returned to writing for live ensemble performance. One of the reasons he has broadened his sights beyond the player piano, the composer said, is that musical skills may have finally caught up with the technical demands of his music.

Mr. Nancarrow's stock has risen so much in recent years that he is now overwhelmed with work and has had to turn away commissions. Recently he learned that a sarabande and scherzo for oboe, bassoon and piano that he'd

written decades ago and had completely forgotten about was unearthed in a music library and performed to an enthusiastic public response.

"Of course it's pleasing," Mr. Nancarrow said of his belated celebrity. "I mean, all those years I had been working now have some point. There are so many artists and writers who are doing something they think is worthwhile, and it turns out to be junk. I thought that maybe mine was the same thing, but now I see it wasn't."

COMPLETE STUDIES FOR PLAYER PIANO The Music of Conlon Nancarrow

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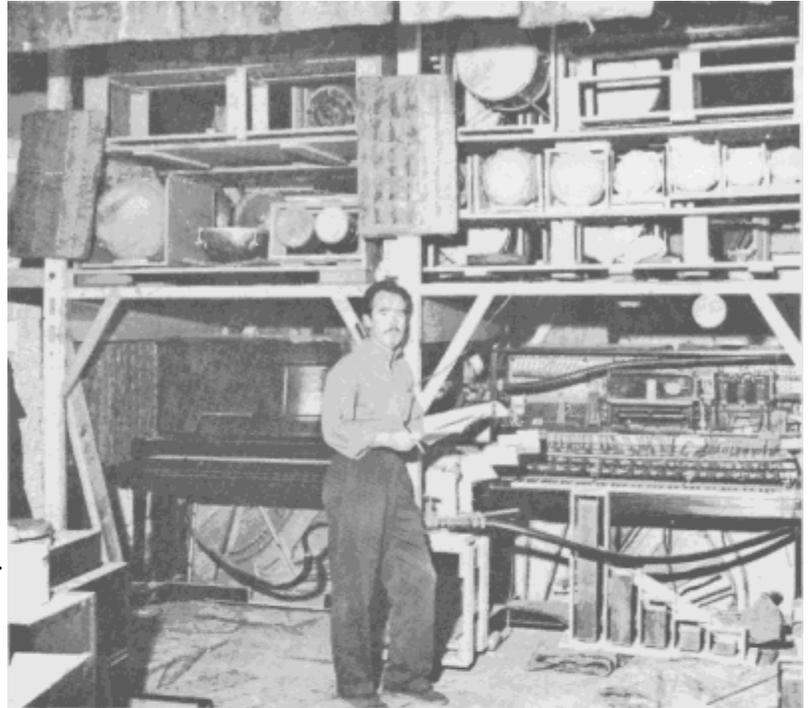
Photos:

1). Nancarrow at work on his pneumatically-operated percussion ensemble (never completed). The instruments were to have been programmed by a player piano roll.

2) The time-consuming process of punching a roll. All photos: early 1950's.

Tucked away in a quiet suburb of Mexico City, in effective isolation from the urban hustle, Conlon Nancarrow is probably right now at work on the next in his remarkable series of *Studies for Player Piano*. Begun some thirty years ago, the set already consists of over forty-five individual pieces, ranging in length from one to ten minutes each, and adding up now to a total playing time of nearly three hours. It is thus a very large body of work, which was almost totally unknown until recently, and is, even now, known to only a small number of people—mostly composers.

Over the last three years it has been my good fortune not only to meet the man, but to acquire a nearly complete collection of scores and tape recordings of the *Studies*. It is a dazzling experience to listen to the whole set in numerical sequence—an experience not unlike the one many of us had a decade or so ago when we heard the first recordings of the complete works of Webern. And on the basis of my own growing familiarity with the *Studies for Player Piano*, I predict that 21st-century historians will rank Conlon Nancarrow - with Edgard Varese, Olivier Messiaen, John Cage, Harry Partch, Karlheinz Stockhausen, Iannis Xenakis, and perhaps a very few others - as one of the most important composers of this third quarter of the 20th-century. Moreover, I believe that



Nancarrow's *Studies* will stand with the most innovative works of Ives, Schoenberg, Stravinsky, Webern (and "a very few others") as the most significant works composed since 1900 in terms of their ultimate influence on the progressive development and evolution of our powers of musical perception. I am aware that these predictions may seem extravagant to some, but I am convinced that, when Nancarrow's music is as accessible and widely known as that of his contemporaries and immediate predecessors, its importance will be just as widely recognized, and there will remain no room for doubt. Meanwhile, the continuing obscurity of Nancarrow's work is nothing short of scandalous. The list of books on 20th-century music and its composers which have not one single mention of Nancarrow in their texts is virtually the whole list of such books now or until recently in print.

What is it that makes Conlon Nancarrow's *Studies for Player Piano* so important? To begin with, they constitute a virtually exhaustive investigation and creative realization of countless new possibilities in the areas of rhythm, tempo, texture, polyphonic perception, and form, all of which will provide exciting challenges to composers, theorists, and listeners alike for many decades to come. But more than this, it is the extraordinary quality and variety of his "investigations" which is so remarkable. On the one hand, there is enough in these pieces in the way of systematic, intellectual organization to satisfy the most mathematically abstruse "constructivist." On the other hand, there is enough lyrical freedom, rhapsodic invention, and sheer fantasy to warm the heart of the most outrageously romantic "intuitionist." The music is at times austere, dry, cold-as-ice; at other times warm, passionate, explosively exuberant. And yet one has no sense of stylistic inconsistency or esthetic contradictions here. It is simply that these *Studies* explore a very wide range of formal and expressive worlds.

Among several ironies arising in any consideration of Nancarrow's work, the most profound is the fact that his achievement has been wrought entirely within an apparently obsolete, even anachronistic medium—a medium whose *raison d'être* had always been entertainment, not art—the player piano! His decision to concentrate all of his efforts in this one medium was made sometime in the 1940's, after several years of frustration in trying to get his pieces played accurately. The *Toccata* for violin and piano (ca. 1936) and the *Sonatina* for piano (1941) were already extremely difficult pieces to perform, extending to their very limits the abilities of players at that time. Nancarrow has told me that if he were younger—if that moment of decision had occurred a few years later than it did—he would surely have begun working in the electronic medium. But in 1947 (or even earlier) this was not yet a viable alternative—electronic music was little more than a "gleam in the eye;" of a few composers like Varese, Cage, Pierre Schaeffer. Henry Cowell, in his book *New Musical Resources* (1930), had suggested that the player piano could provide an effective means of realizing the complex rhythmic relationships he envisioned—and Nancarrow has said that Cowell's book was one of his own early inspirations. In retrospect, it seems curious that Cowell himself—or Charles Ives, for that matter—never tried composing for the player piano.

It would have been the ideal medium (in their time the only medium) in which some of the more difficult rhythmic ideas in Cowell's *Fabric*, for example—or Ives' *In Re Con Moto Et Al* might have been realized accurately. Stravinsky, Antheil, even Percy Grainger, were among the very few "serious" composers ever to have made any effort to use the player piano, but these efforts were only incidental to their work as a whole. Thus it remained for Nancarrow alone to rescue this instrument from the oblivion of antique shops and pizza parlors, and give it a new life—a life far more vital than it had ever had as a medium for commercial or entertainment music. And in his hands it has turned into an extraordinary medium indeed!

The limitations of the player piano are obvious enough—surely no one is more painfully aware of them than Nancarrow himself: its fixed tuning, its timbral homogeneity, and the sheer practical difficulties involved in punching a roll. We shall see, later, with what ingenuity he has managed to deal with the problem of timbre, and he professes no great interest in the subtleties of intonation or of harmony, so that the fixed tuning of the piano has simply never bothered him. As for the practical problems of punching the rolls, he seems to have done about all that could be done to facilitate the process, although it remains a slow and tedious one, requiring incredible patience and persistence. But Conlon Nancarrow is a patient and persistent man—a fact for which we may all be grateful. In the late 1940's Nancarrow had built for him a device for accurately punching the rolls, the design for which was based on equipment then still in use at one of the commercial player piano companies

in New York. Later he had this first machine rebuilt to incorporate certain improvements which I shall describe in more detail later, and it is this second machine which he is still using to cut his rolls.

It would be a mistake, of course, to mention the limitations of the player piano without considering its great advantages. The first and most obvious of these is its capability of realizing, with great precision and at an incredible speed, virtually any rhythmic or temporal relation that can be marked out on a roll. In this respect, it is still superior to most of the current analog-synthesis techniques in electronic music, and it is surpassed only by computer-synthesis methods like MUSIC V-and these, it should be noted, have their own problems and "limitations." Secondly, the medium is completely self-contained -Nancarrow does not need the help of anyone else in order to make his music, and thus the whole "politics" of musical performance is happily avoided.