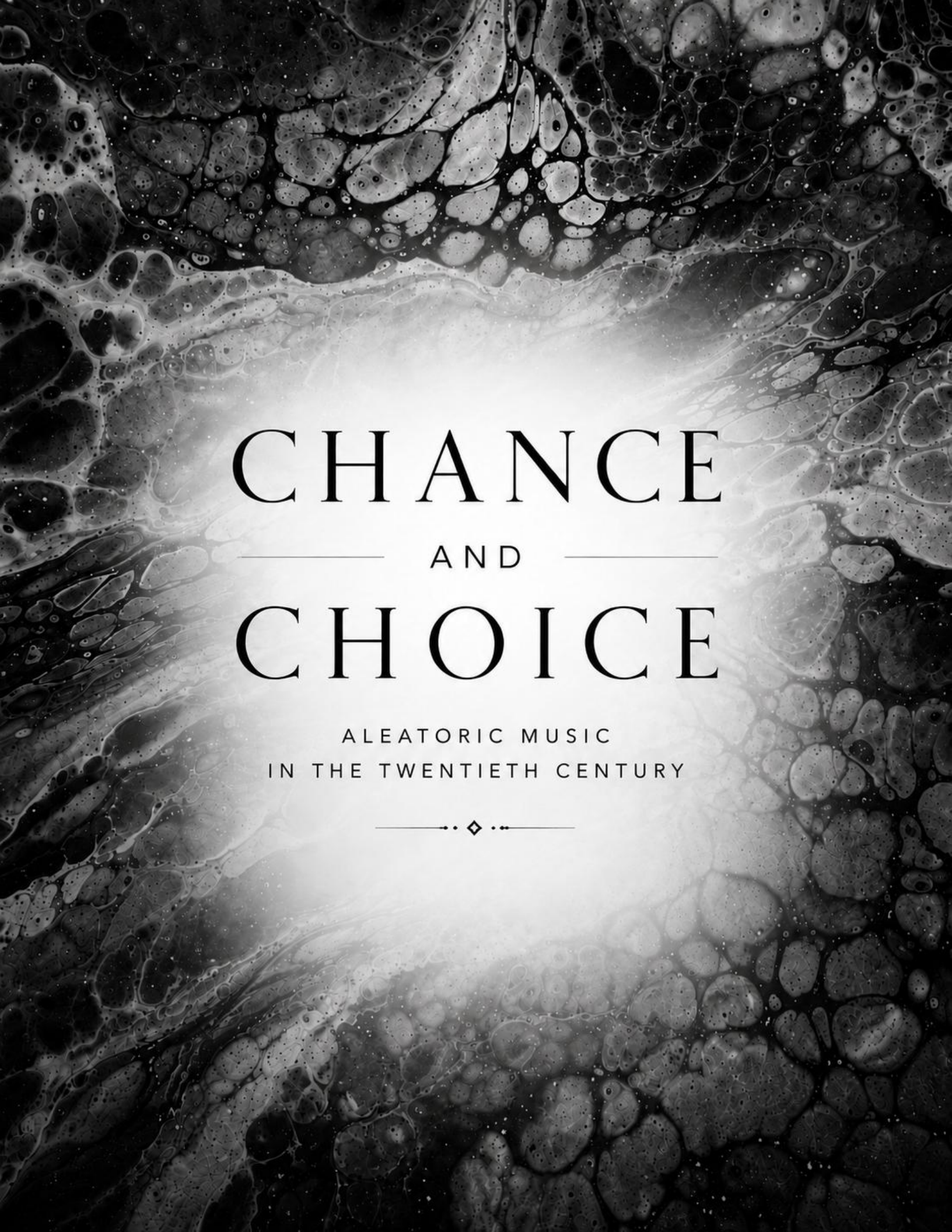




CHANCE — AND — CHOICE

ALEATORIC MUSIC
IN THE TWENTIETH CENTURY



Chance and Choice: *Aleatoric Music in the Twentieth Century*

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First Edition

Aleatoric Music in the Twentieth Century

The summer courses at Darmstadt have become so central to histories of postwar music that they sometimes obscure how uncertain the period actually felt to the musicians who attended them. Looking back through correspondence from the early 1950s, one encounters remarkably little confidence that a new musical language had already been found. Pierre Boulez argued for increasing structural rigor, Karlheinz Stockhausen searched for methods capable of organizing every musical parameter, while others remained unconvinced that the expanding complexity of serial technique necessarily produced more compelling musical experience. The surviving letters, lectures, and conference proceedings record disagreement far more often than consensus.¹

One senses that uncertainty in the criticism as well. Reports from concerts in Cologne, Paris, and Donaueschingen describe audiences attempting to understand works whose formal logic could not always be grasped during a first hearing. Newspaper writers repeatedly borrowed language from mathematics, architecture, astronomy, and abstract painting because conventional musical vocabulary seemed inadequate. A reviewer might compare isolated sounds to stars suspended across a night sky, while another reached for the image of a Calder mobile whose balance shifted as the viewer moved through space. The metaphors differ, but they share a common hesitation. Critics recognized that they were hearing something for which inherited descriptive language no longer seemed sufficient.

Only gradually did the word *aleatoric* begin appearing with any regularity. Even then, it rarely meant the same thing twice. German writers often employed *aleatorisch* for compositions admitting controlled variability during performance, while English-language criticism preferred broader expressions such as "chance music" or "indeterminacy." The distinction mattered. John Cage's compositional procedures, Witold Lutosławski's *ad libitum* textures, and Karlheinz Stockhausen's mobile forms all redistributed musical decisions in different ways, yet contemporary criticism frequently gathered them beneath a single heading that concealed as much as it clarified.²

Listening complicates these classifications almost immediately. David Tudor's recording of *Music of Changes* does not sound like Lutosławski's *Jeux vénitiens*, nor does either resemble the shifting formal sequences of *Klavierstück XI*. Their common ground is historical before it is sonic. Each emerged from composers asking how much of a musical work should exist before performance begins, but the answers they produced differ substantially. Cage employed chance operations to interrupt personal intention during composition. Lutosławski preserved complete control over pitch while loosening rhythmic coordination among performers. Stockhausen

explored forms that remained structurally coherent while permitting multiple successions of musical events. The shared vocabulary of aleatoricism sometimes obscures these differences instead of illuminating them.

It is tempting to tell this history as though these ideas appeared suddenly after the Second World War. They did not. Older musical practices had long accommodated degrees of uncertainty without identifying them as aesthetic principles. Renaissance singers ornamented plainchant according to local custom. Baroque keyboard players realized figured bass from notation that intentionally left countless details unresolved. Printed collections of musical dice games circulated through Central Europe during the eighteenth century, allowing amateur musicians to assemble minuets by throwing dice across a table. None of these practices anticipated John Cage in any direct sense, but together they remind us that Western musical notation has never eliminated performer judgment or variability altogether.³

An eighteenth-century *Musikalisches Würfelspiel* is a curious object to examine today. The pages contain neatly numbered measures arranged beside instructions explaining which fragments correspond to particular throws of the dice. The resulting minuets sound almost disappointingly conventional. Their phrases balance neatly, cadences arrive where expected, and harmonic motion proceeds according to familiar Classical conventions. Chance remains almost completely inaudible because every possible measure had already been composed to fit every other. The unpredictability lies in the order of events, not in the musical language itself.

The postwar generation inherited this longer history without necessarily recognizing it. Their concerns lay elsewhere: the expansion of serial thought, the emergence of electronic studios, new philosophical writing circulating through Europe and the United States, and the broader cultural dislocations that followed 1945. Under those conditions, chance ceased to function merely as a compositional amusement or a performer's practical freedom. It became a subject of sustained aesthetic debate. What had once existed quietly within musical practice now entered the center of compositional thought.⁴

Historical Origins

The temptation to locate a single beginning for aleatoric music has shaped much of the literature surrounding the subject. Earlier surveys often moved quickly from eighteenth-century musical dice games to John Cage, treating the intervening centuries as little more than background. The archival record is considerably less obliging. Practices involving performer discretion, incomplete notation, or externally determined musical decisions appear intermittently across European musical history, but they emerged within different social worlds and answered

different musical questions. Their resemblance to twentieth-century aleatoricism is real, though rarely direct.⁵

Printed collections of *Musikalisches Würfelspiel* circulated widely during the second half of the eighteenth century. Participants generated minuets by throwing dice and selecting numbered measures from printed tables, assembling complete dances from fragments already composed by the publisher. Modern readers often expect the resulting music to sound disjointed, yet surviving examples reveal remarkably polished pieces. Phrase lengths remain balanced, harmonic motion proceeds conventionally, and cadences arrive exactly where eighteenth-century listeners expected them. Every possible outcome had already been anticipated by the system itself. Chance altered sequence without disturbing style.⁶

The publications themselves deserve closer attention than they usually receive. Musical notation occupies only part of each page. Around it are numerical grids, explanatory tables, and printed instructions whose appearance recalls arithmetic manuals more than scores. They were sold as entertainments for domestic music making. Families gathered around the keyboard, cast dice across the table, and produced new dances from existing materials. The novelty resided in the procedure. The music remained comfortably familiar.

Improvisation presents a more substantial historical precedent, although it belongs to another tradition altogether. Renaissance singers embellished plainchant according to local custom. Seventeenth-century keyboard players realized figured bass from abbreviated notation, supplying harmonies, inner voices, and ornaments absent from the printed page. Violinists expanded written melodies through diminutions learned from teachers rather than from scores. None of these performers would have described their work as indeterminate. They were simply practicing musicianship as it was understood in their own time.⁷

Charles Burney's travel journals linger over such performances with surprising frequency. He admired singers whose embellishments seemed effortless, praising their judgment more often than their originality. The distinction matters. Ornamentation was expected, but it was also constrained by convention. A successful performer demonstrated taste through variation, not through novelty for its own sake. Reading Burney today, one is struck by how little anxiety he expresses about fidelity to the written text. The score appears less as a finished object than as the beginning of performance.

The nineteenth century slowly altered that understanding. Editorial practice expanded, conductors assumed greater authority, and publishers issued increasingly detailed scores specifying dynamics, articulation, phrasing, and tempo with remarkable precision. Critics began speaking of the composer's intentions with a confidence that would have sounded unfamiliar to

many eighteenth-century musicians. Fidelity to the text gradually became a public virtue rather than simply one possible approach to performance.⁸

The change was uneven. Improvisation persisted in opera houses, church lofts, and popular entertainment long after it had begun disappearing from the cultivated concert repertory. Even so, reviews from the later nineteenth century reveal growing impatience with performers who altered canonical works too freely. Rubato, interpolation, and ornament increasingly attracted criticism when they appeared to challenge the authority of the printed score.

The artistic world inherited by the twentieth century therefore contained two competing traditions. One valued textual stability and increasingly detailed notation. The other preserved older habits of flexibility, adaptation, and performer judgment. Aleatoric music emerged where those traditions unexpectedly met. The composers who would later become associated with chance did not invent musical uncertainty. They inherited it under historical conditions that encouraged them to ask entirely new questions about what uncertainty might accomplish.⁹

The years immediately preceding the Second World War introduced another complication. Composers associated with the Second Viennese School had already challenged the assumptions of tonal organization, but Arnold Schoenberg's twelve-tone method remained, in many respects, an argument for discipline rather than freedom. Every pitch possessed a structural function derived from the row. Anton Webern compressed those relationships into works of extraordinary concentration, where individual sounds acquired unusual weight through their careful placement. Reading Webern's sketches, one finds very little left to accident.¹⁰

The generation that gathered at Darmstadt inherited this concern for organization and, for a time, intensified it. Boulez, Stockhausen, Luigi Nono, Bruno Maderna, Henri Pousseur, and others encountered Webern less as a historical figure than as an unfinished project. His methods seemed capable of extension. If pitch could be serialized, why not rhythm, dynamics, articulation, register, or timbre? Lectures delivered during the early Summer Courses reveal remarkable confidence that every musical parameter might be subjected to systematic control.¹¹

That confidence did not go unchallenged. Reading private correspondence from the same period produces a noticeably different impression from the published lectures. Several younger composers expressed admiration for serial thought while quietly questioning whether complete organization necessarily produced convincing musical experience. The concerns were often practical. Performers struggled with increasingly intricate notation, rehearsal schedules expanded, and listeners frequently reported difficulty perceiving relationships that remained perfectly evident on paper. The problem was not simply complexity. It was whether every structural decision survived the journey from manuscript to sound.

Concert reviews occasionally preserve these tensions more vividly than theoretical essays. A critic attending the Donaueschingen Festival in the mid-1950s described the experience of hearing several newly composed serial works in succession, remarking less upon their technical sophistication than upon the concentration they demanded from performers. Another reviewer, writing after a Darmstadt concert, admitted that the scores appeared more transparent in study than in performance. Such comments rarely dismissed the music outright. They suggest, instead, that listeners were searching for a language capable of describing works whose methods exceeded ordinary habits of hearing.

It was within this environment—not outside it—that aleatoric procedures began attracting serious attention. Chance did not emerge as the opposite of serialism so much as one possible response to its ambitions. Several composers continued pursuing comprehensive systems throughout their careers. Others wondered whether musical organization might be achieved through different means, allowing certain relationships to remain undecided until rehearsal or performance. The divergence was gradual. Looking backward, it is tempting to divide the postwar avant-garde into opposing camps of determinacy and indeterminacy. Contemporary documents rarely support so clean a distinction.

John Cage arrived at many of these questions from an entirely different intellectual tradition. His path toward chance operations passed less through Schoenberg than through percussion music, experimental theater, visual art, and sustained engagement with Zen Buddhism. Yet by the middle of the 1950s his work entered many of the same international conversations. European critics often discussed Cage alongside Stockhausen despite their profound philosophical differences, a pairing that would shape the historiography of aleatoric music for decades to come.¹²

John Cage and the Problem of Intention

John Cage entered this conversation from the margins of European modernism rather than from its center. Although he had studied briefly with Arnold Schoenberg in California during the late 1930s, the experience seems to have confirmed as much what he would not become as what he might. Schoenberg reportedly told Cage that, lacking a feeling for harmony, he would forever encounter an obstacle. Cage later recalled the exchange with characteristic humor, remarking that he decided to spend his life "beating his head against that wall." The anecdote has been repeated so often that it risks becoming mythology, yet it captures something essential about Cage's subsequent career. His most original work developed by asking questions that lay outside the harmonic concerns dominating European composition.¹³

His earliest mature compositions already point in that direction. The percussion works of the late 1930s and early 1940s were not conceived primarily as provocations. They emerged from practical circumstances. Dance companies seldom possessed the financial resources necessary to hire large ensembles, while unconventional instruments could be assembled from brake drums, tin cans, gongs, wooden blocks, and found objects at relatively little expense. Economic necessity and aesthetic curiosity proved unusually compatible. Cage discovered that unfamiliar instruments encouraged unfamiliar ways of listening.

Contemporary reviews frequently dwell on the appearance of these ensembles before discussing their sound. Newspaper photographs show performers surrounded by collections of objects that scarcely resembled orchestral instruments. Audiences encountering *First Construction (in Metal)* or *Imaginary Landscape No. 1* saw brake drums suspended beside tam-tams, automobile parts arranged alongside conventional percussion, turntables sharing the stage with more familiar equipment. The visual impression seems to have mattered. Several critics admitted uncertainty about whether they were attending a concert, a theatrical experiment, or something occupying an uncertain territory between the two.

The prepared piano followed naturally from these earlier experiments. Beginning in the early 1940s, Cage inserted screws, bolts, strips of rubber, bamboo, weather stripping, and other materials between selected piano strings, transforming a single instrument into what he described as a percussion orchestra. Preparation charts survive for many of these works, specifying the exact placement and material required for each altered string. They read with the precision of laboratory instructions.¹⁴

Listening to *Sonatas and Interludes* today, one quickly forgets that every sound originates from a piano. Some notes ring with bright metallic resonance, others produce muted wooden attacks that vanish almost immediately, while neighboring pitches buzz with unstable overtones created by loosely vibrating screws. The effect is not simply one of novelty. Timbre becomes a structural element in its own right. Repeated notes rarely sound identical because each prepared string possesses its own acoustic behavior, and the ear begins following changes in color as closely as changes in pitch.

These works are sometimes treated as a prelude to Cage's later embrace of chance, but the connection is less obvious when viewed through the manuscripts themselves. The preparations are meticulously planned. Nothing about them is accidental. Every object is measured, positioned, tested, and recorded before performance. If anything, the prepared piano reveals Cage at his most exacting. The fascination with indeterminacy would emerge only gradually, through questions that increasingly concerned the act of choosing rather than the sounds themselves.¹⁵

By the late 1940s, Cage's notebooks began to change in character. Alongside sketches for compositions appear references to silence, ordinary environmental sound, and short quotations copied from the lectures of D. T. Suzuki at Columbia University. The entries are rarely systematic. A page of rhythmic calculations may be followed by a brief reflection on listening, then by a list of practical reminders concerning rehearsals or instrument preparation. They resemble working documents more than philosophical treatises, preserving ideas before they had settled into coherent arguments.¹⁶

Suzuki's influence has occasionally been overstated, particularly in popular accounts that portray Cage's encounter with Zen Buddhism as an abrupt conversion. The documentary record suggests something slower. Cage attended the lectures regularly and clearly found them compelling, but he continued reading widely in aesthetics, philosophy, and contemporary art while maintaining close friendships with painters, choreographers, architects, and poets working in New York. Zen entered an already active intellectual environment rather than replacing it. Its vocabulary became one thread among several.

The practical problem remained remarkably ordinary: how might a composer avoid writing the same piece over and over again?

Cage's answer eventually arrived through the *I Ching*. The ancient Chinese divination text did not provide musical material; it supplied procedures. Coin tosses generated numerical values that corresponded to charts prepared in advance, each chart governing a particular musical parameter. One table determined duration, another dynamics, another register, another tempo. Before composing could begin, the system itself had to be built. Surviving drafts for *Music of Changes* preserve this hidden labor in extraordinary detail. Entire pages are devoted to numerical grids whose purpose becomes apparent only when read alongside the finished score.¹⁷

Looking through these manuscripts produces an almost contradictory impression. They are exceptionally orderly. Numbers are aligned in careful columns. Corrections appear in sharpened pencil. Rulers have been used to keep tables perfectly straight across the page. One finds little evidence of improvisation. The composer associated more than any other with chance spent weeks constructing administrative machinery through which chance could later operate. Historians have often remarked upon this paradox, though the visual evidence remains striking even after one knows what to expect.

David Tudor's role in realizing these works deserves equal attention. Too often he appears simply as the pianist who premiered Cage's compositions, yet rehearsal correspondence and contemporary accounts suggest a far more collaborative relationship. Tudor possessed an astonishing ability to translate unconventional notation into persuasive musical performance.

Cage trusted him with scores that demanded unusual patience, precision, and concentration because he knew Tudor would approach them without attempting to normalize their unfamiliar gestures. Several later performers have admitted that the greatest challenge lies not in technical execution but in resisting the instinct to impose expressive continuity where the score deliberately withholds it.¹⁸

The first recording of *Music of Changes* still carries that quality. Silence is not treated as interruption or suspense. It simply exists between sounds. A low-register sonority resonates until its overtones disappear almost completely before another isolated gesture appears elsewhere on the keyboard. The spaces between events never seem empty. Pedal resonance, mechanical noise from the action, and the acoustic character of the room gradually become part of what the listener hears. One begins paying attention to details that conventional piano literature often leaves in the background.

Reviews from the early 1950s repeatedly circle around this experience without describing it in quite the same way. One critic complained that the music lacked continuity. Another admired precisely that quality, arguing that the absence of conventional development forced attention toward individual sounds rather than thematic process. A third reviewer confessed uncertainty about whether he had understood the work at all, though he admitted that several isolated passages remained vividly in his memory days later. The disagreement itself is revealing. Cage's compositions did not produce a single critical response; they disrupted established habits of evaluation.

Only afterward does *4'33"* appear almost inevitable. Yet there is little in the documentary record to suggest that audiences experienced it as the culmination of a carefully unfolding philosophical program. Most simply encountered an event unlike any concert they had previously attended.¹⁹

The premiere took place on the evening of 29 August 1952 at the Maverick Concert Hall in Woodstock, New York, during a recital organized by the pianist David Tudor. The work consisted of three movements separated by the opening and closing of the keyboard lid. Tudor never struck a key. Contemporary accounts differ in almost every other respect. Some audience members recalled nervous laughter, others remembered irritation, and still others insisted that the hall grew unusually quiet as the performance unfolded. Later retellings have tended to smooth these reactions into a single dramatic narrative, but the surviving newspaper reviews and personal recollections are far less consistent.²⁰

What is striking about those early responses is how little they resemble later philosophical interpretations. Critics rarely wrote about Zen, non-intention, or the ontology of the musical

work. They wrote instead about concerts. Several questioned whether the event should even be considered music. Others complained that audiences had been made participants in an experiment without warning. One reviewer observed that the sounds of the room gradually displaced the expectation that the pianist would eventually begin to play. Another admitted that after several minutes the distinction between performance and environment became unexpectedly difficult to maintain. These are historical documents before they are philosophical ones, and they suggest that the work's earliest significance lay in the experience of listening rather than in any theoretical program subsequently attached to it.

Returning to the score after reading these reviews can be surprising. There is remarkably little to see. Three movements are indicated only by timing, with instructions directing the performer to mark their beginning and end by opening and closing the keyboard lid. Nearly everything that later came to define *4'33"* exists outside the notation itself—in the concert hall, among the audience, within the unpredictable sounds that enter the performance without invitation. The score establishes a frame. The world supplies the material.²¹

It is tempting to describe this as the disappearance of the composer, but Cage's manuscripts argue against so simple a conclusion. Decisions concerning duration, movement divisions, instrumentation, performance instructions, and presentation remain entirely his own. The composer does not vanish. His authority shifts toward designing conditions under which sounds may occur rather than specifying every sound in advance. That distinction separates Cage from many of the improvisatory traditions to which he is sometimes compared.

There is another detail that rarely appears in abbreviated histories. Cage's concern with environmental sound did not begin in 1952. Years earlier, he had remarked that everyday noises possessed musical interest if one listened without insisting that they function as melody or accompaniment. The famous visit to Harvard's anechoic chamber, where Cage reported hearing the sounds of his own nervous system and circulation despite entering a room designed to eliminate external noise, has acquired an almost legendary status in the secondary literature. Whether remembered exactly or embellished through repeated retelling, the story reveals how Cage himself chose to explain the development of his ideas. It became part of his public narrative, repeated in lectures and interviews for decades afterward.²²

European composers encountered Cage's work gradually. Scores circulated more quickly than performances, and essays often preceded direct familiarity with the music itself. Reports from Darmstadt during the later 1950s reveal curiosity, skepticism, admiration, and occasional bewilderment in nearly equal measure. Some regarded his procedures as a welcome alternative to increasingly comprehensive serial methods. Others believed they represented a surrender of

compositional responsibility. Few remained indifferent. Even those who rejected Cage's conclusions found themselves responding to questions that his work had made difficult to ignore.

By the end of the decade, chance had become part of the vocabulary of postwar composition, but it no longer belonged to Cage alone. Stockhausen was asking different questions, Lutosławski had begun developing his own solutions, and younger composers were exploring possibilities that neither American experimentalism nor European serialism had fully anticipated. The discussion widened considerably, even as agreement over its terms became more elusive.²³

Darmstadt, Serialism, and Another Kind of Chance

When Cage's music began attracting attention in Europe, it entered an intellectual environment already occupied by a very different conversation. The composers gathering each summer at Darmstadt were not searching for ways to abandon organization. If anything, they sought to extend it. Twelve-tone technique had demonstrated that pitch could be systematically ordered. The next question was whether rhythm, dynamics, articulation, register, and timbre might be subjected to comparable discipline. Reading lecture transcripts from the early 1950s, one is struck by the confidence with which these possibilities were discussed. Musical composition increasingly resembled research.²⁴

The atmosphere described in memoirs differs somewhat from the official proceedings. Mornings were devoted to lectures and analysis, afternoons to rehearsals, evenings to concerts, and the arguments continued long after the formal schedule had ended. Young composers crowded into cafés carrying scores still marked with rehearsal corrections. Friendships formed quickly, but disagreements appear almost everywhere in the correspondence. Pierre Boulez challenged colleagues with extraordinary directness. Luigi Nono defended political commitments that others considered secondary to musical questions. Henri Pousseur moved easily between competing circles without entirely belonging to any of them. The Summer Courses functioned less as a school than as a temporary community held together by shared curiosity and persistent disagreement.²⁵

Photographs from Darmstadt reinforce that impression. Blackboard diagrams filled with rhythmic permutations stand behind composers who seem only marginally interested in posing for the camera. Cigarette smoke hangs over the rooms. Music stands lean against chalkboards crowded with rows of numbers and arrows. Several images show participants gathered around a piano, not performing but arguing over notation. They are remarkably ordinary photographs, yet they preserve something difficult to recover from published essays alone: the workshop character of postwar modernism.

Serialism acquired its public reputation through complexity, but complexity was never its only ambition. Webern's influence rested partly upon economy. His late works compress extraordinary structural relationships into remarkably brief durations, allowing individual sounds to carry unusual significance. Younger composers admired this concentration and attempted to extend its principles into new musical dimensions. Boulez's *Structures Ia* and Stockhausen's *Kreuzspiel* emerged directly from that ambition, though each reached noticeably different musical results.²⁶

Listening to *Structures Ia* after reading the score can be unexpectedly disorienting. The notation reveals intricate proportional relationships, yet the ear rarely follows them in the orderly sequence suggested by analysis. Individual attacks flash briefly before disappearing into silence. Registers remain widely separated, preventing the listener from gathering isolated events into conventional melodic lines. The performance possesses remarkable clarity without necessarily producing immediate intelligibility. Contemporary reviews frequently acknowledged this distinction. Critics admired the discipline of the writing while admitting uncertainty about what listeners could reasonably be expected to perceive during a single hearing.

Several performers expressed similar reservations. Correspondence between musicians preparing new works for Darmstadt concerts occasionally mentions rehearsal difficulties that extended beyond technical execution. Rhythms could be learned. Dynamics could be memorized. More elusive was the question of whether the structural relationships so carefully embedded within the score remained audible in performance. The issue surfaces repeatedly during the decade without ever receiving a definitive answer.

Stockhausen's own development during these years is particularly revealing because it never followed the simple trajectory sometimes presented in introductory histories. His earliest compositions pursued serial organization with remarkable intensity, yet by the middle of the decade his notebooks increasingly returned to questions of form, perception, and performer experience. The change was evolutionary rather than revolutionary. There is no single manuscript in which determinacy suddenly gives way to openness. Instead one finds gradual adjustments, abandoned sketches, revised diagrams, and occasional comments suggesting dissatisfaction with solutions that had seemed persuasive only months earlier.²⁷

Klavierstück XI, completed in 1956, belongs to this period of experimentation. The score consists of nineteen separate musical groups distributed across a single oversized page. After completing one fragment, the pianist follows a written instruction directing the eye toward another section selected according to the performer's location on the page. No two performances

need proceed through exactly the same sequence. The musical material itself remains fixed; the form does not.

Watching a pianist perform *Klavierstück XI* reveals something the printed score cannot fully communicate. There are brief moments when the performer's eyes search the page before locating the next fragment. Those pauses become part of the music. The audience witnesses the act of reading, the tiny interval between decision and sound. Chance, in this context, is almost visual before it becomes audible.

Stockhausen resisted the suggestion that such procedures surrendered compositional authority. He continued to think of the work as rigorously organized, even if its realization admitted multiple formal possibilities. His disagreement with Cage was therefore deeper than contemporary criticism sometimes acknowledged. Both composers questioned the fixed sequence of musical events, but they did so for markedly different reasons and with very different expectations regarding the role of the composer.²⁸

The distinction became even clearer in conversation than in print. Cage spoke repeatedly of removing personal taste from the compositional process, allowing sounds to exist independently of his preferences. Stockhausen never embraced that objective. His concern lay with expanding the possibilities of musical form while preserving the composer's structural authority. The two men respected one another's work, but their correspondence and later interviews reveal no simple convergence of ideas. Historians have often grouped them together because both challenged fixed musical forms. Their reasons for doing so remained fundamentally different.²⁹

By the close of the 1950s, another voice had begun entering the discussion from outside both New York experimentalism and the German avant-garde. Witold Lutosławski, working in postwar Poland under political and cultural conditions unlike those found in either Darmstadt or Manhattan, approached indeterminacy from a far more restrained position. The devastation of Warsaw, the restrictions imposed upon artistic life after the war, and the gradual cultural thaw of the late 1950s formed the background against which his mature style emerged. His music rarely announces these circumstances directly, but they remain difficult to separate from the composer's cautious public statements and equally cautious musical innovations.³⁰

Unlike Cage, Lutosławski never wished to relinquish responsibility for the sounding result. Reading his essays and interviews, one encounters repeated frustration with descriptions of his music as "chance composition." The label appeared too broad. Every pitch, harmonic progression, orchestral color, and large-scale formal decision remained carefully planned before rehearsals began. What changed from one performance to another was rhythmic coordination

within precisely defined passages. The distinction may appear technical when described abstractly, yet it transforms the music in performance.

The earliest substantial realization of this idea appears in *Jeux vénitiens* (1961). Looking at the score, the eye is immediately drawn to passages marked *ad libitum*. Individual instrumental groups repeat short figures independently until the conductor signals the next section. Synchronization is intentionally suspended, but the harmonic field remains fixed. Every performer knows exactly what to play. No performer knows precisely how those lines will coincide with every other part at any given moment.³¹

The resulting sound differs strikingly from Cage's world. Listening to the opening of *Jeux vénitiens*, one does not hear isolated events separated by silence. Instead, the orchestra seems to shimmer. Wind instruments overlap in continually shifting combinations while sustained sonorities in the strings provide a stable harmonic background. Brief vertical alignments appear almost accidentally before dissolving again into motion. They are never completely random. They are also never exactly repeatable.

One contemporary Polish reviewer compared the texture to sunlight reflected across moving water, where recognizable patterns continually form and disappear without settling into permanence. The comparison is unusually perceptive because it avoids reducing the music to either order or disorder. The listener hears both simultaneously. Harmonic stability coexists with rhythmic fluidity, and the ear moves constantly between those two levels of organization.

Lutosławski later adopted the phrase "controlled aleatorism" to describe these procedures, though even that expression should probably be understood as a practical description rather than a philosophical manifesto. He was solving a compositional problem. Dense contrapuntal textures often became rhythmically inflexible when every entrance required exact coordination. Allowing performers limited rhythmic independence produced orchestral sonorities that no amount of conventional notation could easily achieve while preserving the harmonic precision he considered essential.³²

The solution proved enormously influential. Younger composers recognized that performer freedom need not require abandoning compositional control altogether. Between Cage's chance operations and the exhaustive determinacy of early serialism existed a broad middle ground whose possibilities had only begun to be explored.

The idea that performer freedom might itself become a compositional resource quickly spread beyond Poland, although it rarely did so through direct imitation. Composers borrowed techniques selectively, adapting them to aesthetic concerns quite different from Lutosławski's own. Some adopted flexible rhythmic coordination while retaining conventional notation. Others

became interested in open formal designs or graphic scores. The vocabulary expanded more rapidly than any shared philosophy. By the middle of the 1960s, "aleatoricism" had become a convenient critical label for practices that often had very little in common beyond their refusal to specify every aspect of performance in advance.³³

Earle Brown illustrates this diversity particularly well. His route toward indeterminacy passed not through serialism or Zen Buddhism but through the visual arts. Living in New York during the 1950s, Brown maintained close relationships with painters associated with Abstract Expressionism and became especially interested in the suspended sculptures of Alexander Calder. Calder's mobiles remain stable objects while continually altering their visual relationships as air moves through them. Brown wondered whether musical form might behave similarly—not dissolving into improvisation, but remaining structurally recognizable while permitting continual rearrangement.³⁴

That ambition can be seen immediately in scores such as *Available Forms I*. Musical events occupy separate regions of the page rather than unfolding in a single predetermined sequence. The conductor chooses pathways through the material during performance, shaping large-scale form in real time while remaining faithful to the written musical substance. Reading the score silently conveys only part of the work. Much of its identity emerges during rehearsal, where performers gradually discover that questions usually settled before the first rehearsal remain deliberately unresolved.

Rehearsal reports preserved in the papers of several ensembles reveal an interesting shift in conversation. Instead of asking whether notes or rhythms had been learned correctly, musicians frequently discussed pacing, sequence, timing, and the practical consequences of alternative formal decisions. The score became less a finished script than a framework within which different realizations could develop. Brown appears to have welcomed those discussions rather than viewing them as departures from the work itself.

Morton Feldman reached comparable territory by almost the opposite route. His early graphic scores relinquished exact pitch while preserving remarkably delicate control over density, register, duration, and dynamic level. The visual appearance of these pages is striking. Small geometric symbols are distributed across large areas of empty paper, giving the performer only the broadest indications of musical behavior. The notation encourages careful attention rather than expressive display.³⁵

Listening to *Projection I* after spending time with the score produces an unusual sensation. Sounds seem almost reluctant to assert themselves. A single attack emerges softly, hangs briefly in the air, and disappears before another instrument answers from a different

register. Silence does not separate musical ideas so much as surround them. Feldman later remarked that he wished sounds to exist without immediately becoming memories, and while the statement has often been quoted, the music itself communicates the idea more convincingly than the aphorism.

The differences separating Brown, Feldman, Cage, Stockhausen, and Lutosławski become increasingly apparent the longer one spends with their music. Contemporary criticism often emphasized what they shared because broad categories are easier to write than subtle distinctions. Listening patiently encourages the opposite conclusion. These composers were not converging upon a single method. They were arriving at different solutions to different compositional problems, even when they occasionally employed similar techniques or vocabulary.

A reviewer attending the 1964 Warsaw Autumn Festival remarked that discussions of aleatoricism had begun to resemble discussions of impressionism half a century earlier: everyone seemed to agree that the term described something important, yet almost no one could agree on precisely what it described. The observation remains surprisingly apt. Historical labels often become most convenient at the very moment they become least precise.³⁶

Listening to Aleatoric Music

One consequence of this diversity is that aleatoric music is often easier to distinguish in writing than in sound. Histories of twentieth-century music tend to organize composers according to technique—chance operations, graphic notation, controlled aleatorism, open form—but listeners rarely encounter music in those categories. They encounter performances. The distinctions that appear sharp in textbooks become less obvious in the concert hall, where acoustics, interpretation, instrumental color, and the presence of an audience frequently shape perception more strongly than compositional method.³⁷

David Tudor's performances provide a useful example. Listening to his recording of *Music of Changes*, one quickly notices that silence behaves differently from silence in most piano literature. It is neither suspense nor punctuation. Sounds are permitted to decay completely before another event interrupts the acoustic field. The instrument itself becomes unusually audible. Dampers return to the strings. Pedals click softly beneath the keyboard. Resonances overlap almost imperceptibly before disappearing into the room. The ear gradually shifts its attention away from melody and toward the changing physical behavior of sound.

Several New York critics commented upon this experience without always agreeing about its value. Howard Taubman, writing for *The New York Times*, acknowledged the unusual concentration demanded by Cage's music while expressing uncertainty about its artistic conclusions. Other reviewers found themselves describing audience behavior as much as the

compositions themselves. One remarked that listeners seemed reluctant to cough between events, as though ordinary noises had suddenly acquired unexpected significance. Another confessed that he became increasingly aware of the ventilation system during the performance and could no longer decide whether it belonged inside or outside the musical experience.³⁸

Those reactions are revealing because they describe listening rather than theory. They preserve the uncertainty of first encounters before later philosophical interpretations settled around the work. Reading them today, one senses critics searching for language adequate to experiences they had not anticipated.

Stockhausen's *Klavierstück XI* encourages a different kind of attention. The score contains nineteen distinct musical groups distributed across a single oversized page, but the listener rarely counts them. Instead, one notices discontinuity. Familiar gestures reappear unexpectedly because each performance traverses the page in a different order. The effect resembles walking repeatedly through the same city while choosing different streets each time. Buildings remain where they always were, yet the journey continually changes. The analogy is imperfect, though it captures something about the listener's growing awareness that form itself has become variable rather than fixed.³⁹

Lutosławski's orchestral music asks the ear to follow yet another process. The opening passages of *Jeux vénitiens* resist the temptation to focus upon individual instruments. Short woodwind figures drift independently while sustained harmonies in the strings provide remarkable stability beneath them. Listening through headphones, one begins noticing brief alignments that seem almost accidental—a flute briefly coinciding with muted brass, a clarinet emerging unexpectedly from within the texture before disappearing again. These sonorities exist only for an instant. Another performance will produce different alignments without altering the underlying composition.

Graphic notation complicates listening in still another way. Performances of Feldman's *Projection 1* or Brown's *Available Forms I* often differ so substantially that comparison becomes more instructive than the search for an authoritative realization. One performance lingers. Another moves forward more decisively. Instrumental balances shift. Registers become more or less prominent. The identity of the work gradually migrates away from exact sonic detail toward broader qualities of gesture, pacing, and texture.⁴⁰

Musicologists have occasionally responded by asking which realization deserves analytical priority. The premiere? A recording supervised by the composer? A particularly influential performance? The question has no universally satisfying answer, and perhaps it was never meant to. Much of this repertory resists the assumption that a single performance can fully represent the

work. Archives preserve multiple recordings, rehearsal annotations, revised scores, and performers' markings because each contributes something unavailable in the others. The history of aleatoric music therefore survives not only in manuscripts but also in performances whose differences remain central to the repertory itself.⁴¹

Aleatoricism Beyond the Concert Hall

By the end of the 1960s, the discussion had already begun to move beyond the relatively small circle of composers whose names dominate histories of postwar modernism. Aleatoric procedures appeared in university composition studios, radio workshops, experimental theater, dance collaborations, and electronic music laboratories. Their migration was uneven. In some places they arrived through performances of Cage or Stockhausen. Elsewhere they circulated through scores, recordings, or conversations among composers who had never attended Darmstadt and had little interest in reproducing its aesthetic priorities.⁴²

Electronic music presented new possibilities almost immediately. Composers working in Cologne, Milan, Paris, and later at American university studios found themselves collaborating with machines whose behavior was not always entirely predictable. Magnetic tape stretched, oscillators drifted as they warmed, feedback behaved differently from one session to the next, and splices occasionally produced sonic accidents that proved more interesting than the sounds originally intended. Studio memoirs repeatedly describe moments when technical failure became compositional opportunity. The distinction between error and discovery grew less stable than engineers might have preferred.

The archives of the WDR Studio preserve numerous tape boxes marked with handwritten corrections, revised timings, and alternate edits. Looking through photographs of the studio, one notices composers crouched over reels of magnetic tape, razor blades and grease pencils scattered across the worktable. Composition often proceeded by physically cutting, rearranging, and rejoining strips of tape measured in centimeters rather than measures. Every edit represented a decision made with the hands before it became an audible event.⁴³

Yet electronic music did not simply replace notation with technology. Many composers continued thinking in terms of form, proportion, and large-scale architecture even as the sounds themselves became increasingly unfamiliar. Listening to early electronic works today, one hears textures that no acoustic ensemble could easily produce, but one also hears composers wrestling with questions already present in the scores of Cage, Stockhausen, and Lutosławski. How much should remain fixed? How much might be allowed to emerge through process?

Improvisation introduced another set of questions. During the 1960s, ensembles devoted to free improvisation developed independently in Britain, continental Europe, and North

America. Their relationship to aleatoric composition remains difficult to define because many participants rejected the language of chance altogether. Performers in groups such as AMM often insisted that attentive listening, not randomness, governed their decisions. The music depended upon heightened awareness of other musicians rather than upon externally imposed procedures.⁴⁴

Recordings by AMM can initially seem almost motionless. Metallic sounds emerge quietly, disappear, and return transformed. Conventional pulse is largely absent. Individual instrumental identities become difficult to distinguish as extended techniques blur familiar timbres into dense fields of noise and resonance. Nothing announces itself as foreground or accompaniment. The performance appears to evolve collectively without obvious leadership, though repeated listening reveals subtle acts of response occurring continuously beneath the surface.

It would be misleading to describe such performances as aleatoric in the same sense as Cage's chance operations or Brown's open forms. Decisions remain intentional, even if they are made spontaneously. At the same time, historians have good reason to place these repertoires in conversation with one another. They emerged within overlapping artistic communities, shared performers, and addressed related questions concerning authorship, notation, and musical authority. The boundaries separating composition from improvisation proved considerably more porous than institutional histories sometimes suggest.

By the 1970s, universities had begun teaching many of these techniques as part of ordinary compositional practice. Graphic notation appeared in composition seminars. Electronic studios introduced students to stochastic processes, tape manipulation, and algorithmic thinking. Open-form compositions entered ensemble repertoires once regarded as almost exclusively devoted to the Western canon. The institutionalization of these practices is one of the quieter stories in the history of twentieth-century music. Procedures that had once provoked bewilderment gradually became familiar enough to be assigned as classroom exercises.

The shift is visible in pedagogical literature from the period. Textbooks that had treated indeterminacy as an avant-garde curiosity in the early 1960s began discussing it alongside orchestration, notation, and formal design only a decade later. What had changed was not merely the music itself but the expectations of composers, performers, and listeners. Aleatoricism had become one compositional possibility among many rather than an assault upon the very definition of music.⁴⁵

Conclusion

Looking back across the history of aleatoric music, one is struck less by the triumph of a single compositional idea than by the persistence of a question. How much of a musical work must exist before performance begins? The answers offered during the second half of the twentieth century proved remarkably diverse. Cage displaced compositional choice through chance operations. Stockhausen searched for forms capable of changing while preserving structural coherence. Lutosławski granted performers rhythmic independence without relinquishing harmonic authority. Brown and Feldman approached the same territory from still different directions, one through mobile form, the other through increasingly delicate acts of notation. Their solutions rarely converged.⁴⁶

That diversity has sometimes been obscured by the vocabulary historians inherited. "Aleatoricism" remains a useful term, but it can also encourage the impression that composers shared a common aesthetic program when they often shared little beyond dissatisfaction with inherited assumptions about the finished score. Reading correspondence from the period, one encounters disagreement almost as frequently as agreement. Cage's essays sit uneasily beside Boulez's criticism of chance procedures. Lutosławski repeatedly distanced himself from descriptions of his music as indeterminate. Stockhausen insisted that mobility should never be confused with the abandonment of compositional structure. The historical record is full of arguments that later surveys have occasionally compressed into consensus.⁴⁷

The surviving recordings preserve those differences more vividly than theoretical writing alone. Tudor's measured patience in *Music of Changes*. The continually shifting orchestral surfaces of *Jeux vénitiens*. The visual hesitation of a pianist searching across the page during a performance of *Klavierstück XI*. Feldman's nearly motionless expanses of sound. Brown's rehearsals, where the form of the piece remained unsettled until the ensemble itself began moving through the score. These works belong to different musical worlds even when they are discussed under the same historical heading.

The archives reinforce that impression. A notebook filled with numerical calculations. A score covered with rehearsal annotations in several hands. A tape box labeled and relabeled after successive edits. Concert programs folded into personal papers, newspaper reviews clipped and filed beside correspondence, performers' markings preserved in rental parts long after a premiere had ended. Historians often speak of compositions as finished objects, yet these materials suggest something more fluid. The musical work continued changing as performers rehearsed it, critics described it, audiences heard it, and composers reconsidered it years later.

Many of the questions raised during the 1950s and 1960s remain active today, although they now appear in unfamiliar forms. Algorithmic composition, interactive installations, live electronics, adaptive media, and machine-assisted composition all distribute musical decisions across systems that extend beyond the individual composer. Their technologies differ radically from coin tosses, oversized score pages, or *ad libitum* notation, but the underlying questions have changed less than one might expect. Who chooses? When is the choice made? How much of the work exists before performance begins, and how much comes into being only as the work unfolds in time?

No single answer emerged during the twentieth century, and perhaps none was ever likely to. That may explain why aleatoric music continues to reward historical study. It did not replace one compositional method with another. It expanded the range of possibilities available to composers while forcing musicians, listeners, and scholars to reconsider assumptions that had become almost invisible through long familiarity. The debates remain unfinished because the music itself refuses finality. Each new performance reopens questions that earlier performances left suspended, reminding us that uncertainty, carefully cultivated, can become one of composition's most enduring materials.⁴⁸

Notes

¹ Martin Iddon, *New Music at Darmstadt: Nono, Stockhausen, Cage, and Boulez* (Cambridge: Cambridge University Press, 2013), 19–43; Hermann Danuser, "Darmstadt," in *The New Grove Dictionary of Music and Musicians*, 2nd ed., ed. Stanley Sadie (London: Macmillan, 2001).

² Paul Griffiths, *Modern Music and After*, 3rd ed. (Oxford: Oxford University Press, 2010), 158–174; David Nicholls, ed., *The Cambridge Companion to John Cage* (Cambridge: Cambridge University Press, 2002), 1–15.

³ Richard Taruskin, *The Oxford History of Western Music*, vol. 2 (Oxford: Oxford University Press, 2005), 608–616; Peter Williams, *Figured Bass Accompaniment* (Edinburgh: Edinburgh University Press, 1970), 1–24.

⁴ Michael Nyman, *Experimental Music: Cage and Beyond*, 2nd ed. (Cambridge: Cambridge University Press, 1999), 1–30.

⁵ Lydia Goehr, *The Imaginary Museum of Musical Works* (Oxford: Oxford University Press, 1992), 173–212.

⁶ H. C. Robbins Landon, *1791: Mozart's Last Year* (New York: Schirmer Books, 1988), 135–139; Taruskin, *Oxford History of Western Music*, 611–615.

⁷ Peter Williams, *Figured Bass Accompaniment*, 24–56; Richard Taruskin, *The Oxford History of Western Music*, vol. 1 (Oxford: Oxford University Press, 2005), 746–760.

⁸ Lydia Goehr, *The Imaginary Museum of Musical Works*, 205–242.

⁹ Goehr, *The Imaginary Museum of Musical Works*, 242–249; Taruskin, *Oxford History of Western Music*, vol. 3 (Oxford: Oxford University Press, 2005), 5–27.

¹⁰ Richard Taruskin, *The Oxford History of Western Music*, vol. 4 (Oxford: Oxford University Press, 2005), 350–374.

¹¹ Martin Iddon, *New Music at Darmstadt*, 44–82.

¹² Paul Griffiths, *Modern Music and After*, 164–174.

¹³ David Revill, *The Roaring Silence: John Cage—A Life* (New York: Arcade Publishing, 1992), 39–46; James Pritchett, *The Music of John Cage* (Cambridge: Cambridge University Press, 1993), 1–12.

¹⁴ James Pritchett, *The Music of John Cage* (Cambridge: Cambridge University Press, 1993), 20–37; David Revill, *The Roaring Silence: John Cage—A Life* (New York: Arcade Publishing, 1992), 71–95.

¹⁵ Pritchett, *The Music of John Cage*, 37–52.

¹⁶ David W. Patterson, "Cage and Asia: History and Sources," in *The Cambridge Companion to John Cage*, ed. David Nicholls (Cambridge: Cambridge University Press, 2002), 41–59.

¹⁷ James Pritchett, *The Music of John Cage*, 71–91; John Cage, *Silence: Lectures and Writings* (Middletown, CT: Wesleyan University Press, 1961), 59–73.

¹⁸ David Nicholls, ed., *The Cambridge Companion to John Cage*, 72–87; Pritchett, *The Music of John Cage*, 82–91.

¹⁹ David Revill, *The Roaring Silence*, 157–170.

²⁰ Kyle Gann, *No Such Thing as Silence: John Cage's 4'33"* (New Haven: Yale University Press, 2010), 119–147; David Revill, *The Roaring Silence*, 164–170.

²¹ John Cage, *Silence*, 22–36; Kyle Gann, *No Such Thing as Silence*, 147–168.

²² John Cage, *A Year from Monday* (Middletown, CT: Wesleyan University Press, 1967), 127–134; David Patterson, "Cage and Asia," 54–58.

²³ Martin Iddon, *New Music at Darmstadt*, 83–118; Paul Griffiths, *Modern Music and After*, 166–175.

²⁴ Martin Iddon, *New Music at Darmstadt*, 19–56.

²⁵ Martin Iddon, *New Music at Darmstadt*, 56–82; Pierre Boulez, *Notes of an Apprenticeship*, trans. Herbert Weinstock (New York: Alfred A. Knopf, 1968), 111–139.

²⁶ Robin Maconie, *Other Planets: The Music of Karlheinz Stockhausen* (Lanham, MD: Scarecrow Press, 2005), 67–113.

²⁷ Robin Maconie, *Other Planets*, 113–152; Karlheinz Stockhausen, *Texte zur Musik*, vol. 1 (Cologne: DuMont Schauberg, 1963), 23–41.

²⁸ Karlheinz Stockhausen, *Texte zur Musik*, 42–51; Robin Maconie, *Other Planets*, 152–171.

²⁹ Karlheinz Stockhausen, *Texte zur Musik*, 52–63; John Cage, *Silence*, 18–22; Paul Griffiths, *Modern Music and After*, 171–174.

³⁰ Charles Bodman Rae, *The Music of Lutosławski*, 3rd ed. (London: Omnibus Press, 1999), 67–87.

³¹ Rae, *The Music of Lutosławski*, 88–111; Witold Lutosławski, *Lutosławski on Music*, ed. and trans. Zbigniew Skowron (Lanham, MD: Scarecrow Press, 2007), 83–94.

³² Lutosławski, *Lutosławski on Music*, 95–103; Rae, *The Music of Lutosławski*, 112–126.

³³ Paul Griffiths, *Modern Music and After*, 175–183.

³⁴ Earle Brown, *Collected Writings 1938–1995*, ed. Thomas DeLio (Cologne: Beginner Press, 1997), 95–118; Thomas DeLio, "Earle Brown's Available Forms," *Perspectives of New Music* 20, no. 1/2 (1981–82): 411–428.

³⁵ Thomas DeLio, *The Music of Morton Feldman* (New York: Excelsior Music Publishing, 1975), 18–43; Morton Feldman, *Give My Regards to Eighth Street: Collected Writings of Morton Feldman*, ed. B. H. Friedman (Cambridge, MA: Exact Change, 2000), 81–92.

³⁶ Jadwiga Paja-Stach, "The Idea of Controlled Aleatorism in Polish Music," *Polish Music Journal* 2, no. 2 (1999): 1–17.

³⁷ Michael Nyman, *Experimental Music: Cage and Beyond*, 31–55.

³⁸ Howard Taubman, "Music of John Cage Heard at Carl Fischer Hall," *New York Times*, January 9, 1952; Kyle Gann, *No Such Thing as Silence: John Cage's 4'33"* (New Haven: Yale University Press, 2010), 92–98.

³⁹ Robin Maconie, *Other Planets: The Music of Karlheinz Stockhausen*, 152–171.

⁴⁰ Theresa Sauer, *Notations 21* (New York: Mark Batty Publisher, 2009), 18–47; Earle Brown, *Collected Writings*, 109–118.

⁴¹ Lydia Goehr, *The Imaginary Museum of Musical Works*, 249–265; Nicholas Cook, *Beyond the Score: Music as Performance* (Oxford: Oxford University Press, 2013), 1–24.

⁴² Christoph Cox and Daniel Warner, eds., *Audio Culture: Readings in Modern Music* (New York: Continuum, 2004), 221–245.

⁴³ Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 87–104; Curtis Roads, *Composing Electronic Music: A New Aesthetic* (Oxford: Oxford University Press, 2015), 201–243.

⁴⁴ Edwin Prévost, *No Sound Is Innocent: AMM and the Practice of Self-Invention* (Essex: Copula, 1995), 1–39; George E. Lewis, *A Power Stronger Than Itself: The AACM and American Experimental Music* (Chicago: University of Chicago Press, 2008), 37–54.

⁴⁵ Curtis Roads, *Composing Electronic Music*, 244–271; Christoph Cox and Daniel Warner, *Audio Culture*, 240–257.

⁴⁶ Paul Griffiths, *Modern Music and After*, 183–190; Richard Taruskin, *The Oxford History of Western Music*, vol. 5 (Oxford: Oxford University Press, 2005), 89–110.

⁴⁷ Pierre Boulez, "Alea," in *Stocktakings from an Apprenticeship*, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 26–38; John Cage, *Silence*, 18–36; Witold Lutosławski, *Lutosławski on Music*, 95–103.

⁴⁸ Umberto Eco, *The Open Work*, trans. Anna Cancogni (Cambridge, MA: Harvard University Press, 1989), 1–23; Nicholas Cook, *Beyond the Score: Music as Performance*, 285–309.

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