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Citation

Giulia Accornero, “Was 1974 The End of Music History? Universalism, Cybernetics, and the International Conference of New Musical Notation,” in Material Cultures of Music Notation. New Perspectives on Musical Inscription, ed. Emily Payne and Floris Schuiling (London: Routledge, 2022), 15–30.

Published version

https://doi.org/10.4324/9780429342837-3

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Was 1974 The End of Music History?

Universalism, Cybernetics, and the International Conference of New Musical Notation

Giulia Accornero (Harvard University)

The beginning of the end

In the closing years of the last millennium, neoliberal historian Francis Fukuyama announced that we were approaching the End of History in his best-selling book *The End of History and the Last Man* (1992).[1] His argument drew on Hegel's teleological history, tracing the progress of the absolute spirit towards the end goal of mankind: human freedom. For Hegel (1975[1857]), this process was intelligible through an investigation of the intimate relationship between the historical facts of the 'material' world, and the subjective development of the 'spirit', or individual consciousness. Historical events, he argued, could be read as a succession of theses and antitheses leading towards a final synthesis. For Fukuyama, Hegel's narrative of the successive stages of human freedom revealed the larger 'process at work … that gives coherence and order to daily headlines' (Fukuyama 1989, 3). The daily headlines he had in mind were those foretelling the collapse of East Germany, confirmed in November 1989 by the fall of the Berlin Wall, and followed by the demise of the Soviet Union. He reinterprets these as the crucial events that, aided by the forces of market capitalism and modern science, would lead to the final synthesis in which history would find its end: the victory of liberal democracy and the triumphant universalization of the Western idea of humanitarian government and freedom. By invoking the 'end of history' Hegel and Fukuyama did not, of course, mean to suggest that nothing more would ever happen; rather, that the prefigured process that gave history its impetus and meaning had run its course and been completed. These events marked the moment of perfection and the endpoint after which nothing else mattered as 'historical events'—or so Hegel and Fukuyama claimed.

In this chapter, I wish to ask the question: could we date 25 October, 1974 as the End of Music History? That day was the last day of the International Conference on New Musical Notation in Ghent, Belgium. The conference aimed to develop a new standardization of musical notation in order to improve channels of communication between composers and performers put increasingly at risk by recent stylistic and notational upheavals. The four-day conference was the endpoint of a long-term enterprise: the Index of New Musical Notation initiated in 1970.[2] As the title announced, the goal of the Index was to systematically compile the notational symbols and procedures of New Music, in order to rationalise the recent deluge of notations European and American composers had invented since the 1950s (Stone 1975, 19). Compilation depended on an eighty-page survey (Figure 2.1) administered in English, German, and French to a thousand professionals in the field of music. Four years later, thirty percent of the surveys had been returned, supplying the material for discussion in Ghent. Eighty-four professionals, including composers,

[1] This book was an expansion of a previous article published in the summer of 1989.

[2] The Index, located at the Music Division of the Lincoln Center in New York, was funded by the Rockefeller Foundation and sponsored by the New York Public Library and Music Library Association. In 1973 the Ford Foundation provided further funding to support U.S. participation at the Ghent conference.

performers, musicologists, and editors from seventeen countries gathered to scrutinise, discuss, and finally vote on which of the ***[p.16]*** indexed signs should be included in a standardised system of notation.[3] The proceedings of the conference were published in 1975 in the journal *Interface*.[4] Its final results became the backbone of Kurt Stone's 1980 guidebook *Music Notation in the Twentieth Century*, a text that aimed to develop a notation that could codify music from any time and place, thus granting it the power of a universal language. If this grandiose ambition had been realised, the history of Western art music would have ended here with the final synthesis of its development—at least to its supporters.

Figure 2.1 First page of the questionnaire issued by the Index of New Musical Notation (1974)

This enterprise shares certain basic assumptions with Hegel's and Fukuyama's 'end of history', and it is important that now, as music studies interrogates its obsession with the score and the European canon, we consider its implications. What were the ***[p.17]*** underlying principles behind this enterprise? What were its implicit goals? And what are the consequences for music historiography? The detailed archival materials that the Index team left behind—personal notes, articles and essays, advertisements, grant proposals, letters, and office records—provide a valuable window onto the prevalent cultural beliefs that guided New Music professionals in Europe and North America.

Music history's teleological development

The driving force behind the project, Kurt Stone (1911–1989), was a freelance music editor. A German Jew, Stone left his country for the United States in 1938 in order to escape the anti-Semitic politics of the Third Reich. After settling in New York, he became involved in the avant-garde music scene through his editorial career (Associated Music Publishers, Music Press, Broude Brothers, Joseph Boonin) as well as numerous academic articles and lectures on music notation.[5] On 1 March, 1971, Stone initiated the Index of New Musical Notation with Gerald Warfield, a former music instructor at Princeton who specialized in avant-garde notation (Stone 1972, 183). The impetus behind the project, Stone argued, was the proliferation of notational approaches he wrestled with as an editor. Musicians, he observed, 'began to resent the ever increasing profusion of notational ambiguities, identical notation for different effects in different compositions, and totally unexplained signs and procedures' (Stone 1980, xvii). They expressed concern that rehearsal time was mostly devoted to interpreting matters of notation, even though extending rehearsals was too expensive an option (ibid.). Concert performances were unsatisfactory as a result. This was one of the main reasons '"advanced" contemporary music […] was still "controversial," [and] still had not been accepted by the general public the way other new art forms have' (Stone 1974, 16). The Index for New Musical Notation was presented for funding to the Rockefeller Foundation as a project that would solve the 'growing impasse in communication" that New Music was facing due to the ambiguities and redundancies of the

[3] The conference was organized by the Index of New Musical Notation (director: Kurt Stone, associate director: Gerald Warfield), Seminar of Musicology at the State University of Ghent (director: Jan Broeckx, principal assistant: Herman Sabbe), and Institute for Psychoacoustics and Electronic Music, Institute for Psychoacoustics and Electronic Music in Ghent (IPEM; technical director: Walter Landdrieu, artistic director: Lucien Goethals).

[4] *Interface*, vol. 4, no. 1, (1 November 1975). *Interface* (1972-1993) is now the *Journal of New Music Research* (1994 - present).

[5] Biography compiled by Kurt Stone (Index, Box 6, f. 4–5, Writings 1973–1975).

current notational system (Index, Box 8, f. 2, Conference Literature 1974). (Keep in mind the word 'communication', as later in this chapter its importance will be clearer). But Stone was guided by more than the scruples of a 'conscientious editor'. The agenda of the Index can be fully appreciated only through an examination of the historiographical assumptions supporting his narrative of Western contemporary music and its notation.

Consider how Stone positioned his own project within the history of what he, in accordance with German musicological categories, called 'serious music' (Stone 1980, xiii), as opposed to popular music. In an article from 1976, later extended in the introduction to *Music Notation in the Twentieth Century* (1980), Stone outlined a teleological history of Western art music that focused on its privileged form of inscription: notation. He identified three major shifts in notational procedures. First was the 'shift from monody to polyphony around 900 C.E.' in which (he claimed) pitches were represented diastematically and durations were measured (Stone 1980, xv).[6] This caused notation to grow 'steadily in precision and comprehensiveness' (Stone 1976, 50). Second was the shift from traditional part-books to score notation at the dawn of the seventeenth century. As 'harmony took on a life of its own by becoming an independent functional force capable of dominating the linear elements that had previously reigned supreme,' a vertical visualisation of chords and chord progressions was necessary (Stone 1980, xv). In this phase, notation became fixed and 'did not change fundamentally for 350 years', proving 'remarkably adaptable' to stylistic changes from the early Baroque period to the Second Viennese School (50). The third and final shift was the stylistic upheaval that started in the 1950s.

[p.18] To be sure, Stone was not alone in presenting this narrative. Despite its superficiality (and factual inaccuracies), it echoes fundamental clichés of Western (music) history. First, it recalls Fukuyama's reliance on teleological history in that it filters and organises a multiplicity of events to fit a narrative about the progression of a single principle—in this case, the development of notational means. The inevitable consequence of teleological history is, in Foucault's diagnosis, the assumption of 'the existence of immobile forms that precede the external world of accident and succession' (Foucault 2000 [1971], 371). (In its dependence on metaphysics, this type of narrative is essentially Western.) Composers, according to this perspective, are rational minds that, guided by these 'immobile forms', mark the progress of music history. Second, Stone's history defines itself through literacy—i.e. notation—which progresses teleologically toward increasing control of its own means. Gary Tomlinson notes that this narrative was formalised by Nikolaus Forkel in his *Allgemeine Geschichte der Musik* (Forkel 2005 [1788]), so that 'the history of European musical development could be plotted as a story of the progress of writing', and non-written musics—mostly depicted as non-European—were the prerogative of anthropology that tracked the 'space of writing's absence' (Tomlinson 2012, 64). Moreover, as Lydia Goehr has shown, since the dawn of the nineteenth century, 'when composition was defined as involving the predetermination of as many structural elements as possible', music was construed as an object reified in its notated score—i.e. a commodity—and the 'work-concept' became a regulative ideal of the relationship between composer and performer (Goehr 2007 [1992], 234). Postwar composers of New Music also participated in the promulgation of this teleological narrative, in which what was to be 'controlled' through inscription had a specific name: the material. As Marcus Zagorski has argued, 'this succession of

[6] Even from a purely historical perspective, this information is incorrect. The shift to diastematic notation had already occurred in neumatic notation. His conflation of polyphony and measured notation is also incorrect. Stone might have the *Musica Enchiriadis* in mind when he refers to the birth of polyphony, but there are no extant sources of mensural notation from before the 13th century.

techniques'—and new notational symbols, I would add—'reflected a continental European—more specifically, Hegelian—philosophy of history' that was absorbed by composers in the postwar period (Zagorski 2015, 256). Thus, while Stone's proposed standardisation might initially seem oppositional to the proliferating notations of modernism and the avant-garde, it should instead be interpreted as its culmination.

But before returning to Stone's project, its assumptions and implications, it is useful to review the political and cultural conditions that contributed to the historical self-consciousness of artists, as well as the styles and trends that were connected to the emergence of new notational means.

The last thesis and antithesis: between serialism and aleatory

With Germany still in rubble at the end of World War II, cultural initiatives began cropping up to provide new venues for the arts. The Darmstadt Ferienkurse für Internationale Neue Musik (Darmstadt Summer Courses for International New Music) is exemplary for its central role in providing a venue for composers to recognize themselves in the Western musical tradition while rejecting the identity that Germany and the other Axis powers had built throughout the Third Reich. Founded in 1946, the Ferienkurse, alongside other cultural initiatives, operated under the influence of political reeducation programs enforced by the United States.[7] As David Monod has argued, 'by creating an environment congenial to the production of modern works', the Information Control Division (ICD), a department of the Office of the Military Government of the United States, 'was trying to turn music institutions into instruments of reorientation' (Monod 2005, 197).[8] Culture was instrumentalised to rectify political failings and musical modernism assumed new energy and meaning: compositional novelty was prized as necessary to correct Germany's recent past, or, to set the history of contemporary music back into its 'free development', in the words of the Ferienkurse artistic director, Wolfgang Steinecke. Thus, like their pre-WWI ***[p.19]*** colleagues, composers joined in a search for a language that would adequately reflect the progress of history while aiming to disrupt its tradition. By the 1950s, the United States started to understand that progress as dependent upon the formation of international democratic coalitions and the containment of the Soviet Union. Darmstadt Courses for International New Music thus became the Darmstadt International Courses for New Music in 1949, a label that construed New Music as a unified block and highlighted the international scope of what that block was aiming to achieve.

Shaped by these aesthetic and political sentiments, many different creative impulses coexisted in tension with one another. On the one hand, there were the 'serialists' who, in order to achieve the equal control of primary and secondary parameters down to their microvariations, multiplied already existing notational signs.[9] On the other, the American line of experimental composers, influenced by the 'liberated sounds' of Charles Ives and Edgard Varèse, offered

[7] By mid-1946 the American General Robert McClure was supervising over 37 newspaper, 6 radio stations, 314 theaters and 642 cinemas, and 237 book publishers (Monod 2005, 33).

[8] The American influence on the first two years of the Darmstadt Ferienkurse was limited, as Martin Iddon has shown at length. After 1948, however, the United States became increasingly vocal about shaping an internationally oriented environment. In fact, currency reform threw the Ferienkurse into a crisis, making American funding crucial (Iddon 2013, 19–20).

[9] As Iddon has clearly shown, however, the use of 'serialism' as a useful shortcut for describing the compositional procedures typical of composers gravitating around Darmstadt was the 'product of a particular press reception, encouraged by, not least, Herbert Eimert' (Iddon 2013, xii).

European composers an alternative to Stravinsky-influenced neoclassicism and serialism, through the introduction of extended techniques or experimental musical instruments, which led to an 'emancipation of noise' (Varèse and Chou 1966).[10] The developments of electronic music and *musique concrète*, in particular, strongly impacted music notation not only because they required new symbols to take into account the 'differentiations' that electronic music afforded and were 'not known in earlier music' but also because they brought new possibilities for the inscription of sound—as tape could itself be considered a notated surface (Eimert, Enkel, and Stockhausen 1956, 2).[11] Thus, electronic music's early forms of inscription provided composers with new opportunities to rethink sonic material even when that material was originally produced by acoustic instruments.[12] Moreover, experimental composers from the United States and Europe contributed to the disruption of many basic tenets of Western music: the unidirectional arrow of agency from the composer to the executor/performer, the fixity and formality of concert music, and the autonomy of the musical work.[13] As George Lewis has elucidated, these different tendencies were all part of a 'sociomusical art world that … constructed itself in terms of an assumed high-culture bond between selected sectors of the European and American musical landscapes', and thus still belonged, in Stone's words, to the line of 'serious music' (Lewis 2002, 215). New possibilities were welcomed by composers of the 'serial' as much as the 'experimental' lineage in a constant feedback loop: through the control of new material, they satisfied a modernist rhetoric that constantly asked them to press music history forward, thus justifying their works' historical necessity.[14]

The moral obligations that pushed composers to reconsider or expand their sonic worlds, playing and listening situations, and forms of inscription also produced new forms of musical notation. In certain cases, notational novelties simply entailed minor variations within the system or the rationalization of already existing signs. For example, in his *Sexteto de cuerdas* (1953/57), Mauricio Kagel notated deviations from the conventional twelve-tone division of the scale with small arrows above or below the accidentals. In his piano solo, *Proiezioni sonore*, Franco Evangelisti added notes and numbers to irregular groupings (1955/56). In other cases, composers aimed to control parameters traditionally left to the interpreter such as dynamics and agogics. An example

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[10] According to Amy Beal, the composers belonging to this line are John Cage, David Tudor, Morton Feldman, Earle Brown, Christian Wolff, La Monte Young, Terry Riley, Frederic Rzewski, Alvin Curran, Steve Reich, Pauline Oliveros, and Alvin Lucier (Beal 2006, 1). While it is true that the renovation of traditional orchestral forces was a widespread interest of composers since the dawn of the century, it was mainly thanks to the reconversion of military technology developed during the Second World that new sound media were designed. See Accornero (2018); Patteson (2015).

[11] Within contemporary music circles, electronic music and *musique concrète* soon stimulated questions and anxieties about how they could be represented visually, especially in connection to issues of copyright and authenticity. See, for examples, Moles and Ussachevsky (1957).

[12] As Jennifer Iverson has clarified, during the early days of electronic music at the WDR, it was the work of Cage, in particular his prepared piano pieces, that provided a 'timbral model' for the electronic sound worlds, and his 'square-root forms provided a new inspiration for relating duration and pitch proportionally in the studio and for creating multifaceted, nested forms' (2019, 72–73).

[13] While during the 1950s these venues were mainly explored by American experimental composers—as in the case of Cage and Tudor's *Music of Changes* (1951) or Brown's *December 1952* (1952)—later European composers also started looking at these innovations with interest, often creating hybrids between them. In 1959, for example, Sylvano Bussotti wrote the score *Five Piano Pieces for David Tudor,* in which residues of a traditional notation have lost their meaning and become sources of imaginative association for the performer—who thus becomes a composer at the same time.

[14] For an insightful assessment of how attempts to assert the aesthetic value of serial and post-serial music were grounded in theories of the material and philosophies of history, see Zagorski (2009).

of the former is provided by Earle Brown's *Hodograph I* (1959), in which variations in the thickness of a line correspond to variations in dynamic level. To articulate durations in a way that escaped the implicit metric impulses of the bar-line, John Cage for instance organised time into second-per-page segments (*Music for Carillon I*, 1952/61), or Karlheinz Stockhausen conveyed durations through a proportional use of space (*Zeitmasse*, 1955/56). Yet other notations reflected extended vocal or instrumental techniques for the production of new timbres; since timbre itself was a difficult to codify sonically, composers would codified performers' actions instead, ***[p.20]*** as in Cage's *Water Music* (1952). What was considered notation might also encompass sets of instructions or rulebooks—as in Christian Wolff's *For 6 or 7 Players* (1959)—or graphic or verbal forms that entrusted more agency to the performer by giving them a set of options to choose from for the determination of certain musical parameters. In Roman Haubenstock-Ramati's *Credential* (1960), for instance, the composer allows the performer to choose the order of composed material, more or less determined, presented within a set of squares.

In an article published in 1963, Stone, amidst all of this upheaval, identified two dominant compositional trends and their notational tools—aleatory and chance music 'iconoclastic efforts' on the one hand, both requiring an indeterminate notation, and serialism on the other, requiring a determinate one (Stone, 9)—and focused on the latter.[15] But by the 1970s, Stone recognized that these 'two seemingly irreconcilable aesthetic philosophies have lately begun to meet on a middle ground', observing that one might find different levels of control and freedom in the same score, juxtaposed or even superimposed (Stone 1976, 51). How did Stone—both as an editor as well as responsible for the Index—deal with this fusion of styles and techniques, in which indeterminacy could not anymore be ignored as 'Other'? As we learn from the result published in his practical guidebook, notation, as the 'composer's only means of conveying his ideas to the performers, must be explicit as possible'. And, more importantly, Stone specifies: 'Even if ambiguity or total freedom is intended, the signal for it must be explicit' (Stone 1980, xix). Ambiguity or freedom—or in other words, indeterminacy—was a welcome compositional goal, as dignified as determinate forms of composition, only insofar as it could be codified into an explicit signal. But what did it mean for notation to be the codification of the message in the form of a signal? For the answer, let us turn for the answer to then-contemporary musical discourses reinforced, if not prompted, by the circulation of cybernetics and its cousin information theory.[16]

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[15] Stone observed that in 'that area of our newest music which claims Webern as its founder' the 'chief trends […] run in two very different directions: 1) toward uncompromising exactitude and predictability; 2) toward chance' (1963, 9). Following the style policies of the *Music Educators Journal*, Stone defined aleatory composition as 'a type of music in which chance is used as a compositional technique', and thus is not changed by the performer 'except interpretively'. Chance compositions were those that involve 'choice by the performer in determining the ultimate form the music takes' (Stone 1976, 51). This categorization is consistent with Paul Griffiths' definition in the *Grove Dictionary* entry 'Aleatory'. Griffiths provides us with further possibilities and nuances within the domain labelled 'chance music'. According to Griffiths, the term aleatory is a general term applied to 'music whose composition and/or performance is, to a greater or lesser extent, undetermined by the composer'. Within this general category he includes 'aleatory composition', which 'involves the use of random procedures in determining musical aspects that are to be notated'; 'mobile form', which 'permit[s] the performer some flexibility in realization by means of the provision of alternative orderings'; 'indeterminate notation' which relies on new or newly interpreted signs that 'render the sounds themselves indeterminate', 'graphics' which 'rais[es] graphic notation to the level of visual art, but beyond the level of musical intelligibility, since such scores often provide the performer with little or no information as to how the signs are to be interpreted' (Griffiths 2001).

[16] Thomas Patteson has shown that modernist discourses around mechanical music were already circulating from the beginning of the century, stimulated by the emergence of the gramophone, phonograph, and player piano (Patteson 2015, Chapter 2).

The rise of cybernetics and information theory

Alongside its visual appearance, the very role of notation was changing. Electronic music studios not only introduced new machines, but became resonators for new discourses influenced by the growing formalization of cybernetics and information theory.[17] Their rhetoric was widespread among artists, especially in experimental and electronic music circles.[18] These discourses generally dealt with a set of problems centring around communication, information, feedback, and control and made no distinction between machines and animals (including humans). In Wiener's cybernetic model, in particular, this distinction was erased to the point that 'humans were to be seen primarily as information-processing entities who are *essentially* similar to intelligent machines' (Hayles 1999, 7). Information theory, a branch of cybernetics, was initially motivated by the need to formalise new ways of communicating through and with machines, was quickly embraced as a resource for understanding communication across disciplines. (An example would be Roman Jakobson's application of information theory to linguistics (1963)). Its importation into musical discourse brought along with it the implication that general schemes for modeling communication, such as Claude Shannon's early diagram (Figure 2.2), could be adapted within musical contexts to represent and manipulate the transfer of information from composer (information source) to listener (destination). Thus, in Shannon's model, notation would correspond to the 'encoded' version of the message, i.e. the signal, while the score would correspond to the channel that 'transmit[s] the signal from transmitter to receiver' (2001 [1949], 4).[19]

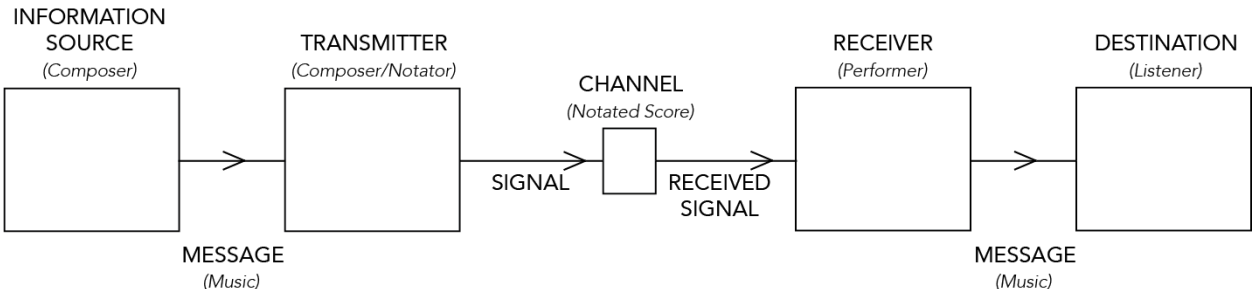


Figure 2.2 Schematic diagram of a general communication system, proposed in Shannon (2001 [1948], 4) with minor modifications). I have added the words in italics to indicate the actors involved when the message is music.

[17] The celebrated fathers of cybernetics and information theory are Norbert Wiener (1894–1964) and Claude Shannon (1916–2001), respectively.

[18] Christina Dunbar-Hester (2010) has retraced the influence of cybernetics on electronic experimental music, Iverson (2019) has shown the impact of information theory, particularly in the context of the WDR studio, and the special issue edited by Christopher Haworth and Eric Drott (2020) provides a rich overview of the influence of cybernetics in the discourses of music theory, composition, and instrumental design.

[19] While Shannon's diagram remained a touchstone for theories of communication, it also underwent significant alterations and transformations across various times and contexts, for as Ronald Kline (2020) has shown, cybernetic and information theory discourses were characterized by instability and disunity.

We can better understand the properties of notation as the codification of the message by tuning in to a radio program featuring György Ligeti and transmitted in 1964 by the WDR Köln.[20] Ligeti explained that notation served its pragmatic purpose only when, in ***[p.21]*** information-theory terms, it operated as a 'means of communication' (Ligeti 2001, 158). As such, it had to be a system of signs or a 'code'—Ligeti's shorthand for the codification of a message into a signal. The peculiar characteristic of a code was that it can be translated into many others: 'the perforated disks of a Barrel organ' might be 'retransformed in musical notation [*écriture musicale*]'; the 'traditional notation [might] be transformed in a time-frequency-amplitude diagram (and vice versa)'; in the same manner 'the Fortran computer programming language' could be 'turned into punched tape and vice versa' to enable a 'computer-human-computer communication' (155). Because musical phenomena might be variously codified, the choice of which designated code to use should rely on the principle of maximizing the 'economy' of signs and the 'congruity' between sign and sonic result (ibid.). Ligeti was highly influenced by Werner Meyer-Eppler (1913-1960), 'the most renowned German representative of information theory', who he had met in the Cologne studio for electronic music (Eimert 1968, 5). Accordingly, he construed the relationship between composer and performer as a matter of unidirectional communication, assuming that the performer would decode the signal and efficiently 'receive' the composer's message.

But the fundamentals of cybernetics and information theory were also widespread in contemporary music circles on the other side of the Atlantic. Only one year before Ligeti's broadcast, Stone published an article (1963) in which he took the identification of the performer with the communication model receiver to the extreme. He observed that 'many of today's notational problems may simply disappear, for almost all of the complexities which are so difficult or even impossible to convey to human performers by means of notational signs can easily be expressed in the programming language of electronic devices' (Stone 1963, 30–31). But in the same article, while setting aside the seemingly inevitable fallibility of performers, Stone focused on how to best codify of the message by achieving a precise and determined notation, making notation comparable to the forms of inscription involved in electronic music. According to the communication model, a highly defined unambiguous notation entrusted to a conscientious performer would allow for accurate reproduction. Ligeti had also left aside the fallibility of the performer and focused on the control exercised by producing a notation that would ideally work as the perfect codification of a message. Here, at play, is a key aspect of information theory: that 'the technical problem of communication (How accurately can the symbols of communication be transmitted?) is given primacy over semantic or effectiveness problems (How precisely do the transmitted symbols convey the desired meaning?)' (Gane 2005, 27).

But what is a notation that does not work as a code? For Ligeti such a thing should be called a *graphism*. A graphism would not constitute a system of signs but rather a drawing that could 'inspire the imagination and musical realization through association' (Ligeti 2001, 155). Stone, similarly, in a later article, wrote about 'graphic notation', which 'unlike ***[p.22]*** traditional notation [...] does not, as a rule, communicate a composer's precise instructions; instead, it

[20] 'Conference given on July 21st 1964 on occasion of the Congress "Notation dans la nouvelle musique". It was broadcast by the Westdeutscher Rundfunk Köln on October 14th 1965 with the title "Musikalische Graphik" and "neue Musiknotation". It was formulated with the aid of Carl Dahlhaus. First published by Ernst Thomas, ed., "Neue Notation–Kommunikationsmittel oder Selbstzweck?", *Darmstädter Beiträge zur neuen Musik*, 1965, 35–50'. In Ligeti (2001, 153–168). All translations from Ligeti's writings are my own.

stimulates the performer's own imagination and draws him into the total creative process' (Stone 1972, 181). 'Graphism' or 'graphic notation' then is the specific aleatory form that could not be comprised in Stone's standardisation dream as, according to its own essence, the message would not codifiable into a signal. While Stone's project was flexible enough to encompass the most varied aesthetics on account of the explicitness of the sign—be that a sign for a sonic parameter, a human action, a required degree of freedom or choice from the performer—it excluded anything that could not be codified.

Accordingly, we find that in the Ghent conference proceedings, one of Stone's collaborators, the musicologist Herman Sabbe, declared that there is a type of notation 'unsuit[able] for standardization', as it is produced by a compositional attitude he identifies as *l'esthétique de l'ambiguité*, the 'aesthetic of ambiguity' (Sabbe 1975, 15, my transl.) This is the aesthetic that lies behind *graphisme* or graphic notation.[21] It relies 'on notation's ambiguity as principle', in that the opacity of the symbol is made into an aesthetic principle, and thus 'the inscription [*écriture*] of the musical work becomes of secondary importance for its formal determination, the intervention of the composer becomes secondary, and the performer's margin of choice grows by inverse proportion" (ibid.). On the contrary, the conference's goals align with those of composers who, while relying 'on the traditional bias of a predominant composer', require "'the adaptation of notational means to the new element of the musical language' (Broeckx 1975).

The final synthesis

We have seen how in the decades after World War II, information theory offered a powerful (though often implicit) way to understand musical notation—a model that, while reshaping the relationship among composers, performers, and the score, offered a way of overcoming different compositional aesthetics (be it serialism or aleatory) and giving coherency and strength to the teleology of Western art music. Within this teleological model, notation was seen as progressing towards perfection as a code that was maximally congruent with the composer's message. The entire history of Western notation was enfolded into this single grand narrative. The end reinforced the narrative as much as the narrative that led to it reinforced a naturalisation of the end result and the power dynamics it installed. Recall Stone's teleological narrative of the development of Western Art music. While today we might dispute the notion that the passage from neumes to mensural notation was a matter of increasing control within the parameters of pitch and rhythm, Stone had to construe it as such in order to nourish the teleological narrative of the development of notation as code. Graphic notation, on the contrary, does not retain a 'link with tradition', for 'it does not communicate a composer's precise instruction', but it simply 'stimulates the performer's own imagination' (Stone 1972, 180).

But what other musical phenomena did the tale of 'notation as code' exclude? It is important to note that there were forms of music other than those that embraced 'the aesthetic of ambiguity' that were not only excluded but erased by that narrative. Consider the various forms of jazz that derived from African-American improvisatory forms, which did not necessarily advance the same 'Eurological' conception of the musical work.[22] These musical forms were

[21] Stone confirms the equivalence between graphic notation and the aesthetic of ambiguity in an article published one year after the conference, where he states that greater standardisation is intended for 'that kind of new notation that would benefit from' it, and 'aleatory notation, such as that of implicit graphics, naturally cannot be included in such project' (Stone 1976, 52).

[22] On the influence of African-American improvisatory forms as well as vernacular forms on the avant-garde, see Cohen (2018), Levitz and Piekut (2020), Lewis (2002), Piekut (2011).

completely unacknowledged, not only by Stone's project but by the experimental music community at large. If they had been taken into consideration alongside the contemporary musical forms that constituted what Stone called 'serious' music, they would have disrupted the linear arch of development that the grand narrative of Western music relied upon in constituting its identity through reflexive processes of oppositional self-definition.[23]

[p.23] Pure graphic notation, admittedly, was a relatively limited phenomenon, and most compositional and performative techniques that involved aleatory elements could be codified and translated into an explicit signal in accordance with Stone's demands. The exclusion of the 'aesthetic of ambiguity' from the history of 'serious music' was also about foreclosing ideological resistance to what sociologist Manuel Castells (2000) has named 'informationalism'. Informationalism is that technological paradigm in which 'information generation, processing, and transmission' have become 'the fundamental sources of productivity and power', introducing specific forms of relations and values in capitalist economies (Castells 2000, 21). It is in relation to this neoliberal paradigm, I argue, that we should understand the Index's enterprise. Once the information model is applied to music, the focus is no longer on the material presence of the commodity, i.e. the 'music' reified in the score: it takes this for granted it and continues a step further. Reified in the notated score, music could be interpreted as a fixed message, ready to circulate as information. The advent of the internet in the 1990s has made informationalism a more transparently pervasive force in the musical world, but Stone's enterprise shows how the model was already shaping meanings and roles of music and music-making in the 1970s.

Thanks to a paradigm that represents notation as information ready to circulate, notation was finally to become a medium through which information could flow easily without the obstacle of culturally bound hermeneutics: a code that could finally 'translate' any music, and thus be naturalized as universal. The way in which a final synthesis was to come about aligns with Frederic Jameson's idea of postmodernity as 'a more homogeneously modernized condition' in which 'we no longer are encumbered with the embarrassment of non-simultaneities and non-synchronicities', as 'everything has reached the same hour on the great clock of development or rationalization (at least from the perspective of the West)' (Jameson 1991, 310). In Stone's words, 'it seemed the right time [to] select the devices that appeared most universally satisfactory' (Stone 1980, xiii). To be sure, while Stone's idea of 'universal' overlaps with that of global, it is a globe defined according to the possibility of homogenizing 'non-simultaneities and non-synchronicities.' If, according to Stone, New Music was a 'new, unprecedented' phenomenon that 'sprang up everywhere around the globe', it is worth noticing that his globe was made of only five continents: Europe, America, Latin America, Asia and Australia (Stone 1972, 180).

In other words, the synthesis Stone projected was not just an abstract metaphysical goal. It was strongly entangled in the neoliberal democratic values of postwar United States, shaped in response to the 'challenges' of 'fascism and communism' (Fukuyama 1989, 9). But, as the Index itself shows, the rhetoric of neoliberal democracy was also visible behind strategic promises that the 'ultimate judgements or collective decisions' were neutral. Neutrality was assured by automating the process so that decisions would 'not be taken by "conscious" human actors but by the cybernetic, unconscious, non-human force', supposedly disinterested from the discursive

[23] As noted by Lewis, '[c]oded qualifiers to the word "music"—such as "experimental", "new", "art", "concert", "serious", "avant-garde", and "contemporary"—are used […] to delineate a racialized location of this tradition within the space of whiteness; either erasure or (brief) inclusion of Afrological music can then be framed as responsible chronicling and "objective" taxonomy' (Lewis 2002, 226).

spheres of politics and judgement (Davies 2017, 240). The neutrality projected by these processes then contributed to the naturalisation and universalisation of the meanings they translated.

We get a sense of that rhetoric from the scrupulous description of democratic procedures reported in the proceedings of the Ghent conference, as well as in the private documents relating to the Index (Sabbe 1975; Stone 1975, xv–xix). In a letter about the conference, for example, Stone expresses his concerns about the selection procedure of the panelists. The selection process must be 'neutral-sounding.' He writes: 'I deliberately overstressed the impersonal aspects, mostly for self-protection, but also because I really believe that all selections should be based on consensus, rather than on anybody's personal ***[p.24]*** involvement' (Index, Box 4, f. 4–5, Music Library Association (MLA) 1971-1975). The 'neutrality' of the enterprise also distinguished it from other contemporary compilations of new musical notation, which according to Stone, mostly featured 'the personal opinions of their respective authors' (Stone 1980, xvi).[24] Stone's practical guidebook was premised upon a 'more neutral, universal and cosmopolitan' basis than other editorial attempts because they stemmed from the research conducted by the Index of New Musical Notation, 'a context independent of any publishing interests', and the democratic decisions process of the International Conference on New Musical Notation (Stone 1980, xviii). Stone underscored this fact especially when comparing his enterprise to the notational standard proposed by the contemporary Polish music publishing center (Polskie Wydawnictwo Muzyczne (PWM)) in Krakow.[25] The relative success of the PWM standard, a product of the antagonistic Eastern bloc, was a potential threat to the universalising goal of Stone's project, a threat he fought back with the principles of liberal democracy inviting PWM representatives to join the Internal Conference (Stone 1976, 51).[26] More generally, Stone and his collaborators worked to create the impression that the results of the Ghent conference had real international relevance and approval, sending announcements of the Index, the questionnaire, and the Conference to five continents and thirty countries between 1972 and 1974.[27] As the archival material indicates, international approval was deemed essential for granting the standardized system the insignia of universality.[28]

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[24] Comparable works are Karkoschka (1966); Read (1969); Risatti (1975).

[25] PWM was a sub-branch the publishing house Ars Polona (Stone 1976, 51).

[26] From the archives of the Index of New Musical Notation, we learn that Stone tried to get in contact with PWM's director multiple times since 1972, hoping to gain their support and involvement in order to absorb their innovations. According to the conference proceedings, the attempt was finally successful: PWM director Mieczysław Tomaszewski was present, along with two representatives of the Polish Author's Society among the conference's panelists, Zbigniew Rudziński and Władysław Kabalewski ('Participants - Teilnehmer' 1975).

[27] The Index of New Musical Notation archive indicates that announcements were sent to specialized journals and music specialists in Argentina, Australia, Austria, Belgium, Canada, Chile, Croatia, Brazil, Czechoslovakia, England, Finland, France, Federal Republic of Germany, India, Israel, Italy, Japan, Mexico, the Netherlands, Norway, Poland, Portugal, Puerto Rico, Russia, South Africa, Sweden, Switzerland, Turkey, Uruguay, and Yugoslavia. Among the panelists at the conference we also find representatives of Universal and Bärenreiter editions, as well as the France Société des auteurs, compositeurs et éditeurs de musique (SACEM).

[28] In 1972 Stone declared that the conference's goal was to 'seek international agreement' to achieve 'a new, universally used and understood standard notation of explicitly or precisely notated music' (Stone 1972, 184). Similarly, in June 1973, a funding request to Richard P. Kapp, program officer at the Ford Foundation, states that to assure 'its universal application' the findings of the Index 'were to be examined and discussed by an international body of experts' (Index, Box 4, f.2). Moreover, to keep the Index a 'neutral' project that could 'be considered entirely objective and trustworthy', Stone and his colleagues refused to engage with composers or musicians that were developing entirely new systems of notation i.e. by discarding the basic functioning of the traditional staff, such as Cornelis Pot's Klavarskribo (1931), Rodney Fawcett's Equiton (1958), and Constance Virtue's Notagraph. See Stone's extended correspondence with Constance Virtue (Index, Box 3, f. 1–20, Correspondence D-Z 1971-1975).

The end of music history?

> Human nature shapes and constrains the possible kinds of political regimes, so a technology powerful enough to reshape what we are will have possibly malign consequences for liberal democracy and the nature of politics itself.
>
> (Fukuyama 2002, 7)

In 2002, in a book called *Our Posthuman Future* written ten years after the *The End of History,* Fukuyama admitted he might have been wrong. Perhaps the end was not really the end, he concedes, because core humanitarian goals of liberal democracy have come under assault from science. If directed towards transhumanist ends, biotechnology could put at risk the 'Factor X' or, in Fukuyama's words, 'the full range of our complex, evolved natures' as human beings (Fukuyama 2002, 172). Did we approach the end of music history in 1974? Or did a similar posthuman threat stop music history from reaching its end?

Stone's guidebook (spoiler alert!) did not become the reference for notational standards, and not only because new notational signs and historical stages followed the completion of his efforts.[29] The various functions to which notation aspires—to be a universal language, to preserve music for posterity, to fully detail every sonic feature beyond pitch and duration—were instead satisfied 'with the help of record, radio and television' and, more recently, the advent of the internet (Cole 1974, 147). In other words, the variability and misrepresentation engendered by the interpretation of the symbolic level of a score could be bypassed by entrusting these new media with recording, circulation, and reproduction of the real.[30]

But critiques of Fukuyama's books might prompt a further reflection in response to Stone's enterprise and the contemporary music landscape it represented. Theorist of science and technology studies Sheila Jasanoff, for example, has shown that by focusing on threatening posthuman forces, Fukuyama implicitly reinforces the Factor X, i.e. 'humanity', as 'something already fully formed and of transcendental value […] wash[ing] out […] the social and material conditions in which human lives are actually lived' (Jasanoff 2006, 268–269). 'Fukuyama cares about Factor X in the abstract, but not, it seems, about the inequality of the social worlds in which each incarnation of Factor X achieves embodied ***[p.25]*** form, lives, works, reflects and dies" (269). Jasanoff thus shows the potential of the posthuman to trigger reflections on the values we attribute to the human. In music studies, George Lewis has analogously argued that by making music with computers and algorithms, 'what we learn is not about machines, but about ourselves, and our environment' (2018, 128).

Similarly, I suggest that the basic posthuman tenet of cybernetics upon which Stone's models for understanding notation implicitly rely—that is, the equivalence of humans and machine—challenges the 'transcendental value' attributed to the human by neoliberal humanitarianism. As I have shown, postwar composers operated as if part of a metaphysical

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[29] Meanwhile, more books and initiatives aimed at codifying notational practices have cropped up. To mention a few: Gould (2016); Read (1969); The Music Notation Modernization Association (MNMA) (1985-2007); The Music Notation Project, http://musicnotation.org/home/about-faq-contact-info/; TENOR - International Conference on Technologies for Music Notation and Representation; Killick (2020).

[30] I use the word 'real' in reference to Friedrich Kittler's use (after Jacques Lacan): i.e., an 'order which is both beyond appearance and outside language, and thus resistant to symbolization of any kind' (Gane 2005, 33). According to Kittler, we can instantiate this order thanks to the technology of the phonograph, as science 'is for the first time in possession of a machine that records noises regardless of so-called meaning' (Kittler 1999, 85).

trajectory in which, acting in their capacity as rational minds, they marked (literally!) the development of Western Art music (and with it, humankind). But the posthuman tenets of 'musical informationalism' undermine the metaphysical model by which composers and their music were understood. It pulls them down from the ideal realm. The equivalence of human and machines ultimately stimulated questions around the agency of each element involved in the information paradigm and the relational systems they installed. The consequence of recognizing the agency of notation is that we can no longer think of it as a transparent 'mark' of an ideal music. If for Stone (and the mentality he represents) notation was supposed to shine forth as a transparent signifier—the ultimate Enlightenment goal—it can be recognized today, instead, as a medium that shapes musical narratives and instantiations. Music studies already took the 'material turn' more than a decade ago, focusing especially on the agency of bodies and musical instruments (Dolan 2012; le Guin 2006; Moseley 2015; Rehding 2016; Sonevytsky 2008; De Souza 2017; Tresch and Dolan 2013). It is more recently, however, that media theoretical and ethnomusicological approaches have fully recognised the affordances and agencies of notation (e.g. Nanni and Henkel 2020; Payne and Schuiling 2017; Ratzinger et al. 2017; Schuiling 2019). Considering the entanglement of musical notation with music history and the teleologies it has produced, I suggest that the recognition of notation's agency will provide pathways to rewriting the very concept of history in the '*history* of music'.

In his 1963 article, Stone feared that 'the programming language of electronic devices' could one day substitute entirely the notation-performer couple (Stone 1963, 31). That posthuman dystopia distracted him from the new musical relations and histories that instruments, computers, and new forms of inscriptions were to engender. Re-reading Fukuyama's words, we might say that while 'a technology powerful enough to reshape what we are will have […] consequences for the nature of politics itself', we need not assume those consequences are malign. By disrupting the naturalisation of teleological history, its hierarchies, and history of exclusions, the posthuman tenets of cybernetics opened a space for rethinking the politics of historiography and the ethical role that a medium like notation might play in it. The year 1974 may, in fact, be the end of music history, but not in the sense that Stone intended; it may instead be the end of teleological music historiography.

Acknowledgments

This chapter benefitted substantially from the input and feedback of a whole 'cybernetic machine'. I especially thank Alexander Rehding for his encouragement and engagement throughout the various stages of this project, and Daniel Walden for the improvements suggested on several versions of this chapter. I also thank Eamon Bell, Clifton Boyd, Suzannah Clark, and Diane (Reina) Oliva for reading and commenting on its final draft, and the editors of this volume for their careful reviews. Finally, this article is based on extensive archival research at the "Index of New Musical Notation records" (The New York Public Library Archives & Manuscripts). I am grateful to the librarians for their assistance.

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