Contemporary Music Review
Vol. 25, No. 3, June 2006, pp. 227–262

Routledge
Taylor & Francis Group

György Ligeti and the Aka Pygmies Project

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At the turn of the twentieth century, György Ligeti's late piano music was performed in various European concert halls alongside music of the Aka Pygmies of Central Africa. The acclaimed project culminated in a CD on the Teldec label entitled Ligeti/Reich: African Rhythms *(Pierre Laurent Aimard/Aka Pygmies) featuring works by Ligeti, alongside works by Steve Reich and music of the Aka. This paper describes and evaluates the uneven critical reception of the project in relation to the precise formal connections between Ligeti's etudes, on the one hand, and the music of the Aka, in particular, and African music, in general, on the other. It traces some of the African citations in Ligeti's etudes to specific source materials, briefly describes the original function and context of the music (even if they are not demonstrably known by the composer), and assesses the ideological dimensions implicit in the way the African materials are put to use in a Western context.*

Keywords: György Ligeti; Piano Etudes; Steve Reich; Aka Pygmies; African Music; Globalization

I

European and American composers have long fertilized their music with compositional forms and techniques derived from non-Western music. Often associated with shifts in musical style, or breaks with the past, this liaison has practically become a representative *modus operandi* for Western musical production in modern times. Its influence ranging from Claude Debussy's adoration of Indonesian polyphony to Philip Glass's embrace of rhythmic and melodic procedures taken from Indian music, non-Western music has served as an expressive resource for and claimed continued residency in Western musical development. As the twentieth century drew to a close, the association of stylistic innovation with cross-cultural blending became pervasive; the observation that an era of unprecedented globalization and technological innovation had engendered musical styles that were irreducibly hybrid and pluralistic became standard. In György Ligeti's lexicon, for example, the very idea of technical

ISSN 0749-4467 (print)/ISSN 1477-2256 (online)
DOI: 10.1080/07494460600726511

invention is linked to the art of 'amalgamating' radically different spheres of musical production: 'Often one arrives at something qualitatively new by unifying two already known but separate domains' (Ligeti, 1988, p. 4). For Ligeti, 'All cultures, indeed the whole wide world, is the material of Art' (in Steinitz, 2003, p. 315; see also Floros, 1996, p. 172). As if in a homologous development with this intellectual tradition, record companies and concert producers, too, increasingly employ marketing techniques whose novelty hinges on cultural border-crossing. From John Hassel's experiments with the Zimbabwean mbira on *Vernal Equinox* to Glen Velez's excursion in percussion techniques from around the globe on *Rhythmicolor Exotica*, crossover music and ethnic polystylism has practically become a staple in the music business today.

African music in particular has been closely associated with various paradigm shifts throughout the twentieth century, a phenomenon that, while little examined or understood, is increasingly reflected in the writing of modern music history. In his recent *magnum opus*, for example, Richard Taruskin associates the 'social meaning' of Steve Reich's minimalist music, its new contexts for musical performance in the early 1970s in particular, with 'African antecedents' (Taruskin, 2005, p. 379). While he does not list any shared technical features, quotations, or precise appropriations by which we might properly assess the degree of influence African music had on the Reichian *oeuvre*, Taruskin nonetheless connects Reich's encounter with African music with stylistic innovation and social critique (ibid., p. 383). This article examines some of the musical and ideological ambiguities produced by such cross-cultural exchange between Africa, on the one hand, and Europe and America, on the other. While it aspires to offer a multicultural historical account that demands recognition of non-Western cultural lineages (traceable to specific local expressive communities) in the formation of Western musical practice, it does not lose sight of the ideological mechanisms at work in such an exchange. As a test case, the article will focus on a single cultural item that appeared at the very end of the twentieth century: the *Ligeti/Reich/Aka Pygmies* project.

In December 1999 famed pianist Pierre-Laurent Aimard presented a concert-workshop at the *Théâtre du Châtelet* in Paris, in which Ligeti's music was presented alongside that of the Aka pygmies of Central Africa. The concept was repeated two years later in the *Kammermusiksaal* of the *Philharmonie* in Berlin. Ligeti introduced the first half of the concert in conversation with the pianist; and the Belgian ethnomusicologist Professor Simha Arom introduced the Aka musicians in the second half. The concert was titled *Diesseits von Afrika: György Ligeti – Aka Pygmäen: Zeitgenössische europäische Kompositionen im Dialog mit der Musikkultur der Aka-Pygmäen Zentralafrika,* and the first half presented five of Ligeti's etudes for piano and also his *Drei Stücke für Zwei Klaviere* (1976).[1] This was followed after the interval by fifteen songs by the *Nzamba Lela* choir from the Central African Republic. The concert was elucidated by a lavish booklet containing biographical information on Ligeti, Aimard, Irina Kataeva (the second pianist of *Drei Sücke*) and Arom, as well as two short essays by Ligeti, explaining his new-found admiration

for African music (its paradoxical tactility, on the one hand, and its rhythmic illusionism, on the other), an essay by Peter Niklas Wilson, outlining the connection between aspects of Ligeti's biography (in particular his exile status) and his noteworthy openness to a wide array of musical influences, and finally a description of an 'expedition' to the Aka pygmies of Central Africa by Stefan Schomann, adorned by vivid photos taken by Harald Schmitt of various unnamed Aka people, dancing and singing.

The acclaimed project culminated in a 2003 recording on the Teldec label entitled *Ligeti/Reich: African Rhythms* (Pierre Laurent Aimard/Aka Pygmies) and featuring, in interlocking order, two works by the American composer Reich, various piano etudes by Ligeti, and music of the Aka. The cover for the CD, designed by Thierry Cohen in shades of Sahara brown, suggests a polyrhythmic field of computer-generated rectangles, floating in an irregular geometric mosaic with no central referent. The CD has a different selection of Aka songs than those sung at the European concerts, but although the sleeve notes supply an essay by Arom and Schomann entitled 'Dancers of the Gods', the songs are not elucidated by notes on their musical structures, social contexts or histories; neither are the African musicians identified by name. The songs are but unspecified tokens of a generalized 'pygmy' music. Some of the Aka excerpts are related to previously released CDs of Aka musical recordings collected by Arom over the last forty years. Different incarnations of the tracks '*Zoboko*', music to accompany a ritual preceding a hunt, and '*Anduwa*', celebratory music following a successful hunt, for example, are represented on the collection *Centrafrique: Anthologie de la Musique des Pygmées Aka*, while '*Mai*', another post-hunt song marking the capture of a large animal, is represented on *Musics and Musicians of the World: Central African Republic*. The *African Rhythm* CD also has a booklet that includes notes by Aimard, describing the shared celebration of rhythm and pulse between the works of the two composers and the music of the Aka, as well as notes by Ligeti, first describing his first encounter with Steve Reich and then outlining some basic impressions of sub-Saharan music, and notes by Reich, describing the compositional process of his *Clapping Music*.

II

The *Ligeti/Reich/Aka Pygmies* project is open-ended and challenging. Yet we detect an element of anxiety in its critical reception in the media, an anxiety that largely reflects uneasiness about the ethos of cross-cultural affinities in an age of drastic inequalities between the First World and its Second and Third World hinterlands. The uneasiness is largely sublimated into an argument on *aesthetic* grounds. Thus Andrew Clements, music critic at the *Guardian*, laments the 'jolt from the earthy abandon of the pygmy music to the rarefied world of Ligeti's piano writing' (Clements, 2003), while Laura Gallati, writing for *WOZ Die Wochenzeitung*, considers the comparison between 'spontaneous' Aka song and the 'professional' sound of the piano jarring and unacceptable: 'On listening to the CD, one cannot spirit away comparisons, which

are in fact improper' ('Nicht aus der Welt zu schaffen beim Abspielen einer CD sind aber Vergleiche, die eigentlich unzulässig sind') (Gallati, 2003). The contrasting instrumentation was matched by the contrasting manner of dress on stage: Ligeti, Arom, and Aimard dressed up in formal European attire, while the Aka ensemble were scantily clad in grass skirts and bead necklaces. Gallati expands her argument against the blending of Western art music with African folk song by drawing on an ethnographic statement from the booklet, which reads, '[The Aka] language has no word for 'family'; instead, 'the camp' forms the fundamental social unit' (Arom & Schomann, 2003). For Gallati, the fundamentally communitarian aspect of Aka music is distorted and betrayed when the music is thus 'transplanted from its own context' (Gallati, 2003).

This line of argument—the disavowal of African cultural difference—can be amplified in the context of writing music history. As an intervention, the *Ligeti/Reich/Aka Pygmies* project, in this view, seems to disrupt the reigning ideology of Western artistic supremacy but only so as to reaffirm it. In Hal Foster's terms, one might argue, the transgressive other is here recognized only to be extracted again. On the topic of a MoMA exhibition of 'primitive' alongside 'modern' art, Foster writes:

> The tribal/modern affinity is largely the effect of a decoding of the tribal (a 'deterritorializing' in the Deleuzian sense) and a recoding in specular modern terms. As with most formal or even structural approaches, the referent (the tribal socius) tends to be bracketed, if not banished, and the historical (the imperialist condition of possibility) disavowed. (Foster, 1985, p. 53)

In the context of the *Ligeti/Reich/Aka Pygmies* project, this argument notes how the aesthetic elevation and exhibition of Aka song is ultimately shoehorned into the logic of affinity-effects. Aka agency is ultimately characterized only in technical musical terms. In this constrained, albeit rarefied, context even the names of the musicians can be effaced without contradiction. Thus Aka voices embody an ahistorical rhythmic field divorced from its specific operational referents and coordinates, and are thereby assimilated into what Michel Foucault calls a 'historical-transcendental' musical tradition: 'an attempt to find, beyond all historical manifestation and historical origin, a primary foundation, the opening of an inexhaustible horizon, a plan which would move backward in time in relation to every event, and which would maintain throughout history the constantly unwinding plan of an unending unity' (Foucault, 1972, p. 227). The ideological effect is to incorporate the other to tradition—first causing a rupture with tradition and then overcoming it—which ultimately serves the interests of a progressive music history, characterized by a quasi-deductive logical line of formal advances. As a former student of Ligeti's notes, the Aka music in this venture was a mere 'accessory' to Ligeti's musical innovations.[2] At worst, then, the decontextualized African art in the *Ligeti/Reich/Aka Pygmies* project simply rejuvenates, in a paradoxical gesture of recognition and disavowal, the continuity of Western tradition.

On the other hand, many critics also note a kinship between these two musical worlds in ways that both dramatize Reich's and Ligeti's actual debt to African music and menace the commonplace aesthetic dichotomies dividing them. A music critic for klassik.com, for example, explains that the shared polyrhythmic structures ('poly-rhythmischer Strukturen') of these musics opens entirely new musical worlds ('ganz neue musikalische Welten'), connecting cultures by effectively demonstrating the subtle interchange of influence between them ('das subtile Wechselspiel der Einflüsse') (klassik.com, 2003). Margarete Zander, writing for *Rondo* magazine, notes the way the bodily music of the Aka ('durch den ganzen Körper pulsierenden und getragenen Rhythmik'), when set against the complexity of Ligeti's etudes, suddenly haunts our perception of the music's patterns. She writes, 'The old patterns of hearing no longer catch, yet new ones automatically emerge, and one asks oneself why one had not already conceived of Ligeti's new music as bodily and African music as complex' ('Die alten Hörmuster greifen nicht mehr, aber es stellen sich automatisch neue ein und man fragt sich, warum man nicht schon eher die Neue Musik Ligetis so körperlich und die afrikanische Musik so komplex wahrgenommen hat') (Zander, 2003). Here, Zander's hearing encounters a limit to the widely held view that African dance music is somehow more 'embodied' than Western concert music. The shared presentation on this CD thereby effectively problematizes a widespread cultural dichotomy, which hinges on a questionable *topos* about the general character of African music. Even Gallati acknowledges shared features, notably the layered rhythmic complexities, between the songs of the Aka and the compositions of Ligeti and Reich. Thus Gallati's hearing, too, challenges the popular, and equally contested, notion that African music is somehow more 'rhythmically complex' than European music.[3] For these writers, then, the ways of listening encouraged by the joint venture can challenge exoticizing habits of thought about African music.

This line of argument—the recognition of African cultural sameness—can be amplified in the context of recent debates about how African music should be represented today. To begin with, the very title of the Berlin concert—*Diesseits von Afrika*—implies not only the truism that an African music concert is to take place on '*this* (the European) side' of the globe, but also that '*another* side' of African music is to be presented in a setting celebrating cultural equivalence.[4] It is not surprising, then, that both Ligeti and Reich distance themselves from 'exotic' uses of African music, favoring instead the music's 'structural' dimensions. Reich writes, 'My interest was in the rhythmic structure of the music. I didn't want to *sound*... African, I wanted to *think*... African' (Reich, 2000, p. 148).[5] In his essay 'Some optimistic predictions (1970) about the future of music', he generalizes the point: 'Non-Western music in general and African, Indonesian, and Indian music in particular will serve as new structural models for Western musicians. Not as new models of sound. (That's the old exoticism trip.)' (Reich, 2000, p. 51). Reich acknowledges that cultural appropriation can 'seem like a kind of musical rape', but argues that 'structural', 'technical' or 'formal' borrowing in the context of cross-cultural exchange is associated with ideological neutrality: 'That information, it seems to me, travels more

easily through customs as it were. Because, in a sense, it's completely neutral information' (Reich, 2002, p. 13).[6] In Reich's assessment of Ligeti, too, he argues that 'Ligeti has proved to be the European composer who has best understood . . . non-Western music'; Ligeti's familiarity with Central African music has been '"well digested"' (Reich, 2000, p. 213). Ligeti himself rejects the categories 'world' music and 'crossover' music, which he considers symptomatic of crass commercialization (see Wilson, 2001). Like Reich, Ligeti instead prizes the formal complexity of the music over its exotic sound. In a conversation with Denys Bouliane, for example, Ligeti expresses the hope that his piano etudes are received neither as 'folklore' nor as the 'eclectic composite of different style elements' ('eklektizistische Zusammensetzung von verschiedenen Stilelementen'), but rather as a '*structural* mode of thinking' ('strukturelle Denkweise') (Bouliane, 1989, p. 75 [emphasis added]; see also Floros, 1996, p. 69).

To support this valuation of *structure* over *sound*, Ligeti's essay for the Berlin concert, as well as his notes accompanying the *African Rhythm* CD, emphasize structural comparisons between African music and his own. For example, Ligeti contends that the compositional process of the etudes began with an awareness of the physicality of playing the piano. By experiencing his own abstract notation as 'tactile form' the composer would metamorphose the final shape of his compositions in unexpected new ways (Ligeti, 2001). Likewise, argues Ligeti, in sub-Saharan African music the physicality of playing an instrument confronts a musical idea, which morphs the resulting acoustic image. For Ligeti, this African mode of music-making was a crucial influence:

> The polyphonic performance of many musicians at the xylophone—in Uganda, in the Central African Republic, in Malawi and in other areas—as well as the solo performances on lamellaphones (mbira, likembe, or sanza) in Zimbabwe, in Cameroon, and in many other areas stimulated me to seek out similar technical possibilities on the piano keys (Das polyphone Zusammenspiel mehrerer Musiker am Xylophon—in Uganda, in der Zentralafrikanischen Republik, in Malawi und an anderen Orten—sowie das Spiel eines einzigen Ausführenden am Lamellophon (Mbira, Likembe oder Sanza) in Simbabwe, in Kamerun und in vielen anderen Gegenden haben mich veranlaßt, ähnliche technische Möglichkeiten auf den Klaviertasten zu suchen). (Ligeti, 2001)

In his notes to the CD, Ligeti equally emphasizes a technical aspect of African music, which he attempted to employ in his piano etudes: 'The formal simplicity of sub-Saharan music with its unchanging repetition of periods of equal length . . . is in sharp contrast to the inner structure of these periods which, because of the simultaneous superpositioning of different rhythmic patterns, possesses an extraordinary degree of complexity' (Ligeti, 2003a). Similarly, Reich's writings on music, as with his notes in the booklet accompanying the CD, call attention to the technical and structural properties of both his own music and African music.

By presenting Aka music alongside the works of two Western composers, then, and by highlighting the structural affinities between these distinct musical worlds, the

Ligeti/Reich/Aka Pygmies project assists in deflating some of the perplexing binaries that separate the formal/aesthetically oriented music of Euro-America from the culture/contextually oriented music of Africa. Along the way, the composers seem to discredit a host of subsidiary myths as well: that Western music is less physical and kinesthetically conceived (buttressed by an ideology extolling its abstract sounding forms) than African music; that Western music is inherently less rhythmic (buttressed by an ideology extolling its harmonic dimensions) than African music, and so on. At best, the *Ligeti/Reich/Aka Pygmies* project thus suggests that these dichotomies may have more to do with a certain brand of racialized commonplaces in the north Atlantic than they do with any empirical African reality.

III

The critical reception of the *Ligeti/Reich/Aka Pygmies* project is therefore contradictory, guided by opposed anxieties about the role of African culture in global modernity. On the one hand, we find a contextualist rebuke, which, while sensitive to the appropriative dimensions of the project, hinges on the ideological projection of what Kofi Agawu would call epistemological difference between Africa and the West. On the other, we find an appraisal of formal affinities between cultural products, which, while attuned to the politics of representation, overlooks how the extraction of African music (in service of its redemption as art) can function as an efficient ideological mechanism. Neither view can be faulted outright. Even the authors and organizers of the project, for whom the juxtapositions display 'a fine interplay of influences . . . above all, a celebration of rhythm and pulse' (Aimard, 2003), reproduce various disarming clichés about African music and musicians that undo their professed egalitarian aspirations. The booklet accompanying the Berlin concert, for example, dabbles in several crude representations of the African continent. The booklet neither provides biographical information on the Aka musicians (who, as is the case with the CD, remain nameless) nor does it offer any anthropological or historical descriptions of the actual musical repertoire performed that evening.

Instead, we find a luscious description of Aka music, at once delighting in excessive admiration and recoiling in horrified alarm, in terms that vividly distinguishes it from its Western counterpart. The account is replete with exotic imagery—'this tropical wild growth of melodies' ('dieser tropische Wildwuchs der Melodien')—and metaphors conjuring the primitivism of ancient times—'this acoustic primal soup' ('dieser akustischen Ursuppe') (Schomann, 2001). For Schomann, Aka music is timeless, archaic, innocent, auto-composed, communal, egalitarian, and fundamentally resistant to change. On hearing the songs of the Aka on site in Mongumba in the Central African Republic, for example, Schomann lovingly describes a sound that arises from 'the depths of time' ('aus den Tiefen der Zeit'), as if to 'open a canal between the childhood days of humanity and the present age of the third millennium' ('Als hätte sich ein Kanal geöffnet zwischen den Kindertagen der Menschheit und der Gegenwart des 3. Jahrtausends'). It is a music that 'knows neither soloists nor hierarchies' ('kennt

keine Solisten und keine Hierarchien'), a music whose polyphonic interactions evade all unisons ('ein Horror vor dem Unisono'). 'Like fish in a swarm,' writes Schomann, 'participants continually react to the movements of the others' ('Wie Fische im Schwarm reagieren alle fortwährend auf die Bewegungen der anderen'). By associating Aka singing with the instinctual behavior of a school of fish, Schomann recapitulates a brand of well-worn German tropes about primitive Africa.[7] Isolated from the rest of the world, the Aka are imagined, as Hegel described Africa, as 'lying beyond the day of self-conscious history', preserving their detachment in a land enveloped by the innocence of childhood (Hegel, 1956, p. 1). As to the status of Aka society in global modernity, Schomann is unapologetically pessimistic. While he speaks nostalgically of a time before the 'dawn of independence, when the land still had hope and innocence' ('in der Morgenröte der Unabhängigkeit, als das Land noch Hoffnung und Unschuld hatte'), Schomann laments the despotic corruption of modern-day central Africa. Now the rainforest offers imagery for a crippling bureaucracy and sinking political hope: it is a 'jungle' of administrative authorities ('Behördendschungel') festering in the 'swamps of corruption' ('Sümpfe der Korruption'). In the context of modern African politics, claims Schomann, Aka innocence is entirely lost; they have become the 'negroes of the negroes' ('Sie sind die Neger der Neger').

Schomann's description shuttles precariously between two understandings of Africa, the first an idealization, the second a demonization: speaking of the modern Central African Republic, the text asserts an authoritarian and paternalistic system of exclusionary politics, and always with no encroachment of specific historical evidence of actual exclusions; yet while speaking of indigenous Aka musicians, already abstracted out of modernity, the text describes the poignancy of instinctual musical practices, filled with archaic spirits, in a tone of hyperbolic respect and admiration. Pre-independence Africa is rendered as a place where noble communities roamed freely and without restraint, while modern, independent Africa has descended into tyrannical rule, rife with ethnic tension. This kind of opposition, placing Africa under a double bind, uncritically affirms the mysterious past over the present. Thus the former is approached with a dream-like deference, while modern Africa is challenged with gloomy *Realpolitik*. Mahmood Mamdani connects this mode of thinking to the ideological demands of global capitalism:

> What we have before us is a divided world . . . inhabited by subjects on one side and citizens on the other; their life is regulated by customary law on one side and modern law on the other; their beliefs are dismissed as pagan on this side but bear the status of religion on the other; the stylized moments in their day-to-day lives are considered ritual on this side and culture on the other; their creative activity is considered crafts on this side and glorified as the arts on the other; their verbal communication is demeaned as vernacular chatter on this side but elevated as linguistic discourse on the other. (Mamdani, 1996, p. 61)

Arguably, the *Ligeti/Reich/Aka Pygmies* project disconcerts some of these binaries. Yet, the effort to glorify Aka song as art falters in Schomann's representation of it.

Through exaggerated praise of Aka song, Schomann's text unwittingly wishes Africa into the wistful archaic timelessness of pre-capitalism, thereby effectively depriving Africans of full participation in the global cultural economy.

Furthermore, the communitarian view of the African landscape (apparently to be protected from the perils of this economy) is, in Mamdani's view, laced with neo-colonial thinking: 'More than anywhere else, there was in the African colonial experience a one-sided opposition between the individual and the group, civil society and community' (Mamdani, 1996, p. 22). Mamdani argues that pluralizing the landscape into distinctive communities, thus channeling a racial division into ethnic tensions, was one of the most brilliant and effective modes of colonial control. This is because communal custom was state ordained and enforced through the institution of Native Authorities (in charge of managing the local state apparatus) in many parts of Africa. That is, colonial authorities defined distinctive laws for ethnic groups (or tribes) with distinctive characteristics, referred to as custom, and, in effect, fractured the ranks of the ruled along an ethnic divide. In sync with the colonial investment in inventing and maintaining distinct tribal identities, Schomann harnesses a native voice to make his point: 'You have your music, we have ours' ('Ihr habt eure Musik, wir die unsere'), he quotes an informant Malala as saying (Schomann, 2001). Not surprisingly, this exclusionary thinking extends to the financial aspects of the project as well. Here, Schomann's preference for keeping the Aka excluded from capitalist exchange is unabashed. He scathingly describes the consequences of Aka participation in the global economy thus:

> We are also dealing here with a group of international stars, who have already toured in France, Switzerland and Brazil. Thereby, given their circumstances, they earn a fortune. But what remains of this? The money fades away between their fingers, and within a short time they are once again living from hand to mouth (Wobei wir bei dieser Gruppe zugleich mit internationalen Stars zu tun haben, die bereits Tourneen in Frankreich, in der Schweiz und in Brasilien absolvierten. Dabei verdienen sie für ihre Verhältnisse ein Vermögen. Doch was bleibt davon? Das Geld zerrinnt ihnen unter den Fingern, und binnen kurzem leben sie wieder von der Hand in den Mund). (Schomann, 2001)

Schomann goes on to describe the corrupting effects of money in the hands of the Aka—how the earnings from concert tours only led to excessive drinking and smoking, bad investments, shootings, marital dysfunction, robberies, and so on. Intriguing musical similarities notwithstanding, the official text accompanying the *Diesseits von Afrika* concert thus fails to envisage anything like a genuinely social, political or economic equivalence between these cultural worlds.

But there are paradoxical tensions on the terrain of the aesthetic *appraisals* as well. Not mentioned by any of the critics, for example, is the startling fact that neither Ligeti nor Reich use Aka music as a basis for those works presented on the CD. Further, Ligeti's most African-inspired etudes draw on music from elsewhere in Africa—most importantly the xylophone music of the Buganda people of Uganda and the horn music of the Banda-Linda of the Central African Republic, but also music of the Gbaya

of South Sudan, the Chokwe of Angola, and even the Shona of Zimbabwe. Of the six etudes represented on the CD only two can be shown to explicitly involve Ligeti's studies in African cultures. The first of these, etude no. 8, *Fém* (Metal), composed in 1989, recalls the polyrhythmic processes and the percussive sonorities of southern African xylophone music, while the second, etude no. 12, *Entrelacs* (Interlacing), composed in 1993, recalls the patterning of the *tusona* ideographs composed in the region of north-western Angola and eastern Zambia. Conspicuous by its absence is the first etude, *Désordre* (Disorder), composed in 1985, which draws on the *ennanga* (harp) music of Uganda, and *Der Zauberlehrling* (The Sorcerer's Apprentice), composed in 1994, which draws on *amadinda* and *akadinda* (xylophone) music of Uganda as well as *mbira* music of Zimbabwe.

Reich's most African-inspired music draws on music from Ghana, Nigeria, Uganda, Zambia and the Central African Republic (where the horn ensembles of the Banda Linda, not the vocal music of the Aka, serve as a compositional model). Indeed, the two pieces on the CD—*Clapping Music* (for clapping hands), composed in 1972, and *Music for Pieces of Wood* (for five pairs of claves, presented here by Aimard alone, by recording each rhythmic layer successively and then superimposing them), composed in 1973—owe their origins to the *gankogui* bell pattern from west African drumming ensembles, most notably the *Agbadza* dance from Ghana. I will now turn to an analytic assessment of the precise workings of the 'Africanized' works of Ligeti represented on the CD, tracing influences to their local African precedents, briefly comparing them, and examining both the tensions and the insights born of the aesthetic kinships suggested by the *Ligeti/Reich/Aka Pygmies* project. This analysis casts new perspectives on the uneven ideological commitments articulated, at a general level, by the critical reception of the project.

IV

After completing his opera *Le Grand Macabre* (1977), György Ligeti suffered a creative hiatus of five years. Then his production moved in a sharply new direction. Ligeti describes this significant turning point ('ein wesentlicher Wendepunkt') as one engendered by a crisis that was at once personal and generational (in Floros, 1996, p. 156). By the 1980s a generation of composers associated with Darmstadt and Cologne in the 1950s and 1960s were at risk, in Ligeti's view, of becoming arcane and doctrinaire. Sensing the danger of academicism ('die Gefahr des Akademismus'), Ligeti sought a compositional style that at once resisted the clichés of the *avant garde* as well as the regressive quotation techniques associated with pastiche-based postmodernism (Floros, 1996, 161). It would be an exaggeration to say that the story of Ligeti's late music is the story of emancipation from the dichotomy between modernism and postmodernism by way of multiculturalism. Nevertheless, multicultural musical influences, notably African, are the keynote of that music, however various in mood and temper the music is.[8] It is the component of African polyphony in his piano etudes (shifting downbeats, asymmetric melodies, inherent rhythmic

patterns, multimeter), for example, above any other feature, that makes possible the 'illusory musical space' ('illusorischen musikalischen Raum'), characterized by static tension and temporal transcendence, that is the hallmark of Ligeti's aesthetic ambitions after 1980:

> I privilege forms that are less process- and more object-oriented: Music as frozen time, as an object evoked as a space in our imagination, an entity that, albeit unfolding in passing time, is simultaneously present in all its moments ('Ich bevorzuge Formen, die weniger prozeßhaft, eher objektartig beschaffen sind: Musik als gefrorene Zeit, als Gegenstand im imaginären, durch die Musik in unserer Vorstellung evozierten Raum, als ein Gebilde, das sich zwar real in der verfließenden Zeit entfaltet, doch imaginär in der Gleichzeitigkeit, in allen seinen Momenten gegenwärtig ist). (Ligeti, 1988; see also Burde, 1993, p. 184)

Ligeti's resistance to compositional systems and schools was itself emblematic of a European school of thought, associated with the philosophy of Theodor W. Adorno. In his 1961 Darmstadt essay '*Vers une musique informelle*' ('Towards an informal music'), Adorno advocates 'a music which has cast off all external, abstract, rigidly demarcated forms, and which ... gains its constitution ... from the objective, compelling force of the phenomenon itself' (Adorno in Toop, 1999, p. 110). Like Adorno, Ligeti had long aspired toward composing musical forms that did not follow an abstract system of externally imposed laws in an inflexible way (which he associated with modernism), insisting instead on a music that followed a flexible, enigmatic path; a music that could produce illusory results floating free of its own guiding logic. On his piano concerto, completed in 1987, for example, Ligeti expounds upon a 'new conception of harmony and rhythm', whereby 'the whole-tone and chromatic scales cancel each other out and in their place there arises a kind of unfamiliar equidistance, enigmatic and as it were "skewed", an illusory harmony which, while arising from within the system of twelve-note equal temperament, no longer belongs to this temperament'. Likewise, on the topic of rhythm, Ligeti explains, 'if this music is played correctly—by which I mean at the correct speed and with the correct accentuation within individual layers—it will after a certain time "take off" like an airplane: the rhythmic events, being too complex to be followed in detail, simply begin to hover' (Ligeti, 1988, pp. 8–13). Ligeti's interest in music that underwent a kind of apparitional transformation from its self-present sounding (as constructed in the whole tone scale, say, or as polyrhythmic layering) into an entirely alien soundscape (as illusory sonority, as emerging rhythmic pattern) resonates with what Adorno describes as 'informal music': a music that 'makes things of which we do not know what they are' (Adorno, 1992, p. 322). In Adorno's terms, one might say, art's task is to issue forth an illusory *surplus*: 'To wrest this more from that more's contingency, to gain control of its semblance, to determine it as semblance as well as to negate it as unreal: This is the idea of art' (Adorno, 1997, p. 78). Although Ligeti's attitude to Adorno was ambivalent (he viewed Adorno as at once 'brilliant and laughable', 'genial and stupid'), the composer had, in fact, made

the claim that his 1963 score *Atmosphères* was actually a successful realization of Adorno's *musique informelle* (Ligeti, 2003b, pp. 96–97; Toop, 1999, p. 110).[9] When Adorno heard the work about six years later he enthusiastically embraced it as an exemplary case of *musique informelle*.

V

In the context of this essentially European compositional *milieu*, it is not surprising that Ligeti's first serious encounter with a radically different musical tradition, with which, by seeming coincidence, he shared basic musico-philosophical ground, was experienced with such 'great wonderment' ('großer Verwunderung') (Ligeti, 2003b, p. 133). Ligeti was initially introduced to African music by one of his students, Roberto Sierra, who brought LPs of Banda-Linda horn music (recorded in the Central African Republic by Simha Arom) to a composition seminar at the *Hochschule* in Hamburg in the early 1980s.[10] According to the composer, he was struck with amazement; the recordings 'opened a very complex polyrhythmic world, which I did not know about' ('Sie hat mir diese sehr komplexe polyrhythmische Welt eröffnet, die ich nicht kannte') (Ligeti, 2003b, p. 133). Ligeti later met Arom in Israel (1984) and then also the Austrian ethnomusicologist Gerhard Kubik in Austria (1987). He struck a collegial friendship with both ethnomusicologists, and became an avid reader of their writings. He wrote a preface to the English translation of Arom's *Polyphonies et polyrythmies instrumentales d'Afrique centrale* (published in 1991) and a handwritten acknowledgement of debt to Kubik, which was printed on the first page of the *Festschrift* for Gerhard Kubik on the occasion of his sixtieth birthday (edited by August Schmidhofer and Dietrich Schüller, and published in 1994). On purchasing the collection *Musik in Afrika* (edited by Artur Simon), containing three landmark essays by Kubik, Ligeti asserts, 'Since then [this book] has been my bible' ('Seither ist es meine Bibel') (Ligeti, 2003b, p. 135). Over the years Arom's extensive transcriptions of central African music, read alongside Kubik's suggestive theories of southern African music, became for Ligeti a central intellectual pursuit, no less than an inspirational source for his compositions in the 1980s and 1990s.[11]

In particular, Ligeti was drawn to the curious discrepancy between the formal processes of the music production and the sounding result of its inner structure. For Ligeti, African music offered a puzzling musical paradox: repetitions of various periods of equal length were interlaced in such a way as to produce quite different resulting rhythmic combinations: 'the ensemble's super-pattern is in itself not played and exists only as an illusory outline' (Ligeti, 2003a, p. 10). Ligeti was fascinated by what I will call the 'psychological doubleness' of African music—the mismatch between the physical actions used to create the music, on the one hand, and the actual sounding images, on the other, the mismatch between the uniform and perpetual pulsation, on the one hand, and the irregular contrapuntal combinations, on the other, and the mismatch between the absolutely symmetrical structure of the music's formal components, on the one hand, and the asymmetrical shape of the

emerging patterns, on the other. Resonant with his deep suspicions of externally imposed structures and schools of musical thought, this was a music that rebelled against its own compositional system, making something, in Adorno's lexicon, of which it knows not what it is. It was as if African music dramatized the very ideal articulated by Adorno over twenty years earlier: a kind of *musique informelle* that lay, in Floros's formulation, 'beyond *avant garde* and postmodern' (Floros, 1996, p. 229).[12]

VI

Ligeti threads into the piano etudes his highly articulated observations about African music in ways that cannot be reduced to stylistic imitation, quotation or transcription. Thus his very incorporation of African music into the substratum of these works is unsystematic. First, in the etudes we find an *amalgamation* of musical approaches drawn from distinct cultural traditions, none of which seem to gain palpable ascendancy. Ligeti's extensive notes and sketches to the etudes are replete with references to the music of Africa, Asia, Europe and the Americas: words like 'Ghana: Gyilli-Xylophone', 'Kevin Volans', 'Amadinda-Etüd', 'Gamelan', 'Debussy', 'Brahms', 'Nancarrow', 'Salsa', to name only a very few, appear on page after scribbled page. Second, it is in Ligeti's *distortions* of original African musical material that an African mode of music-making paradoxically reappears. For example, the overt reference to the texture (and even the timbre) of African xylophone music in the eighth etude *Fém,* which appears between the Aka songs *Bobangi* and *Anduwa* on the *African Rhythm* CD, is destabilized by the non-African ostinato patterns that interact in ever-shifting rhythmic combinations.[13] Ligeti employs two rhythmic figures of different length, the first subdivided into $3+2+2+3+4+4=18$ eighth notes, the second into $4+2+2+4+4=16$, to generate a *talea*-like displacement between left- and right-hand groupings. While notated in 12/8, the music's actual polyrhythmic unfolding does not, as it does in African music, exploit the metric ambiguities inherent to 12/8.[14] Instead we hear a spiky, hard-edged interaction of two lopsided rhythmic machines, at once curiously responsive *and* unresponsive to one another, in a quasi-diatonic field of gradually metamorphosing perfect fifths.

In this etude Ligeti does not, as in its African counterpart, explore the 'inherent rhythms' born of the polyrhythmic layering alone.[15] Rather, the rhythmic patterns themselves are disassembled into strings of continuous quavers (beginning in mm. 34–35) as the harmony thickens into a crowded cluster of dense chromatic constellations. Following a forceful rhythmic unison (m. 57), the movement finally yields to a pellucid and serene coda, permeated by the memory of the music's erratic earlier harmonic combinations. And yet, Ligeti recaptures some basic features of African music at different levels of perception. Speaking generally, Ligeti achieves the kind of 'psychological doubleness' that he so admired in the music of the Buganda and the Banda-Linda. While different in length, for example, the two rhythms in *Fém* seem to share a basic *Gestalt*. In other words, the internal groupings of each rhythmic

talea, vividly punctuated by eighth-note rests, are closely related (the arrangement of the final eight pulses in each pattern is, in fact, identical), thus giving rise, at first, to the impression of a canon of duplicate patterns that is falling out of phase, but illogically so, falteringly. By posing as identical patterns, a mode of hearing is thereby contradicted by what actually becomes of the music. This playful blend of order and disorder is further marked by the seemingly coincidental interactions in the context of the 12/8 measure. For example, the last pulse of every three measures is synchronously silent, yielding a kind of regularity unimplied by the logic of the rhythmic phasing. This almost coincidental outcome is underscored at the close of every twelfth measure when the cycle of phasing comes to an end. Here the final eight pulses intone a rhythmic unison, leaving the last two pulses of the measure silent.

Speaking more specifically, the internal structures of Ligeti's rhythmic *talea*, as it does in *amadinda* music from Uganda and *mbira* music from Zimbabwe, tend to maximize the potential for interlocking in the context of a pulse-based polyrhythm. In both of these musical traditions patterns performed by one player tend to fall in the silences left by another. While points of coincidence and silence in *Fém* are perpetually relocating, the punctured asymmetry of each pattern inclines toward a continuum of hocketing relationships with the other. It is also possible that Ligeti's use of oscillating fifths owes its origin to writings by Andrew Tracey and Gerhard Kubik on the harmonic construction of *mbira*, *matepe*, and various kinds of bow music (e.g. *chipendani*) found in southern Africa. In interviews after 1980 Ligeti mentions Tracey by name, often referring to him as a 'brilliant researcher' ('ein großartiger Forscher'), amongst many to whom he is indebted. Also, his many early notes on and sketches of the etudes frequently bear the words 'Mbira', 'Zimbabwe' and 'Zimba' (Ligeti, 2003b, p. 136). In 'The Matepe Mbira music of Rhodesia', for example, Tracey describes the 'general southern African tendency of harmonic movement' as 'alternat[ing] up and down by one step or tone' (Tracey, 1970, p. 41). Drawing on the work of Tracey, Kubik speculates on the tonal practices of 'the southern African tonal-harmonic belt', in terms of tuning systems of the bow music of the San, which yield various layers of perfect fifths oscillating between two tonics separated by a tone (see Kubik, 1988, p. 46). The sketches to the etudes indicate that Ligeti, who initially titled this etude *Quintes*, was preoccupied with generating different harmonic combinations through manipulations of the interval of a fifth. While never quite predictable, the intervallic patterns in *Fém* often suggest an oscillation between two tonics a tone apart. The opening pattern in the right hand, for example, shuttles between a dyad on B-flat and A-flat before gradually morphing into a leaping figure in mm. 5–6. The pattern in m. 7 recalls the opening back-and-forth on dyads built on A and B (the new rocking itself a step down from the opening oscillation), while the entire opening is transposed by an octave and a fifth at the *una corda* in m. 13.

Most strikingly, perhaps, Ligeti's rhythmic patterning recapitulates, at an embedded level, some of the structural features of African music as articulated by Arom. In his *African Polyphony and Polyrhythm: Musical Structure and Methodology*, for

example, Arom elaborates on a particular form of asymmetry prevalent in Central Africa, which he calls 'rhythmic oddity'. These are rhythmic figures whose periods are segmented close to their central point, but not exactly in half. In Arom's words, 'They follow a rule which may be expressed as half – 1 / half + 1' (Arom, 1991, p. 246). Some common examples of rhythmic oddity found in African music are depicted in Figure 1. In *African Polyphony and Polyrhythm*, Arom represents the structure of these rhythmic figures in numerical terms (Arom, 1991, p. 248). These asymmetrical patterns, often referred to as 'timelines', are mostly found in ensemble contexts that otherwise emphasize a regular metric (dance) beat, such as the 12/8 depicted in Figure 2. Likewise, in *Fém*, the relationship between rhythmic *talea* is, first, expressible as $17-1=16$, on the one hand, and $17+1=18$, on the other. This asymmetry makes possible the auto-phasing mechanism that drives the music's kaleidoscopic unfolding. Second, the internal structure of the right-hand pattern in *Fém* divides into an analogous *short-long* grouping, on the one hand, followed by a *short-long-long* grouping, on the other. This is a kind of multiplication of the basic $4-1/4+1$ structure found in the African pattern depicted in Figure 1(a). In other words, for every eighth note in the timeline of Figure 1(a), Ligeti substitutes a dotted quarter, while every quarter note receives a half note, a transformation that yields the

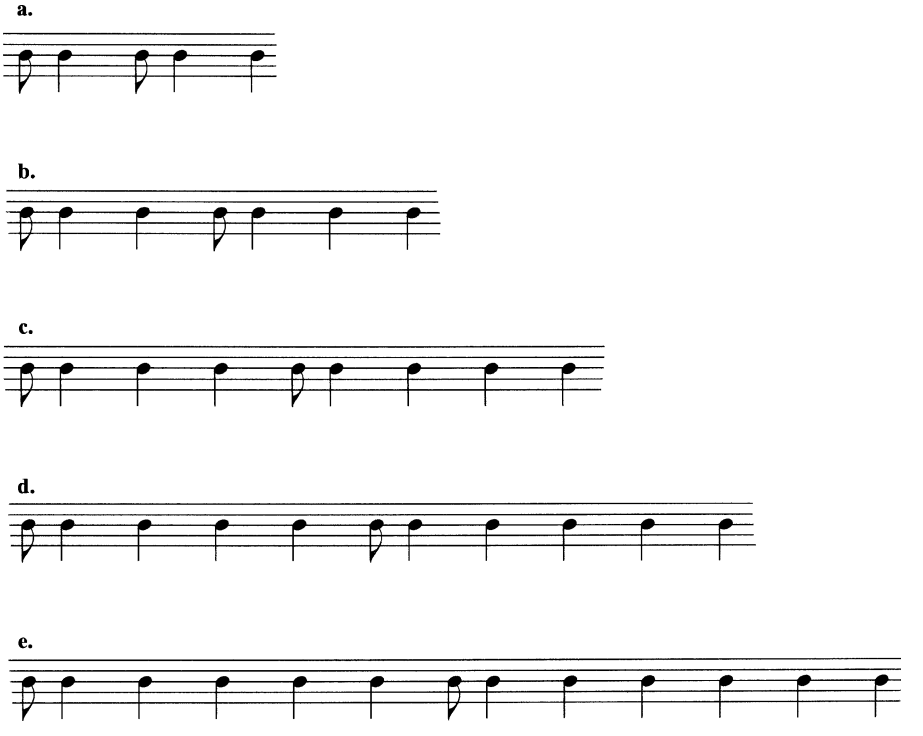


Figure 1 Typical examples of 'rhythmic oddity' in African music.

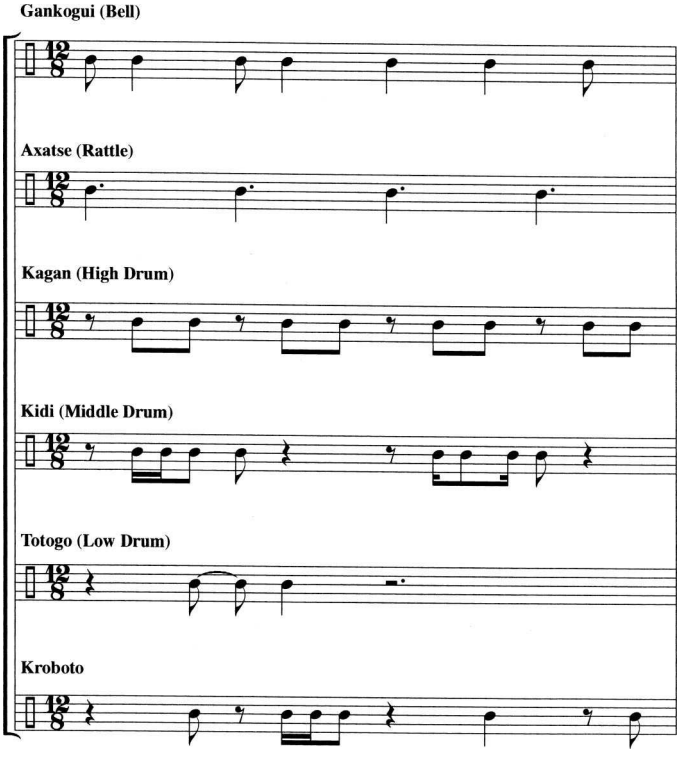


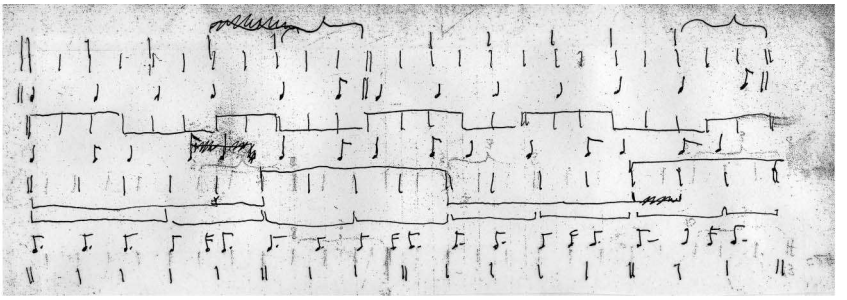
Figure 2 A typical context for an asymmetrical rhythmic pattern: The Ewe Dance 'Agbekor' (south-eastern coast of Ghana).

asymmetric $3+4+3+4+4$ grouping in the right hand. Finally, it should be noted that, as with the African ensemble, this asymmetric pattern in the right hand interacts with a left-hand pattern whose basic grouping structure is cast in a regular $4+(2+2)+4+4$, suggesting the accentual patterns of 4/2.

VII

Ligeti's countless rhythmic sketches of the etudes reveal a considerable fascination with this kind of African asymmetric patterning. The sketch in Figure 3(a) explores the African patterns depicted in Figures 1(a) and 1(e), while that in Figure 3(b) explores the African pattern in Figure 1(c). Ligeti's sketch is an imitative echo of Arom's explorations of African polyrhythmic structure in *African Polyphony and Polyrhythm*. Comparing Ligeti's sketch (in Figure 3[a]) with an example of rhythmic oddity in Arom's book (as in Figure 4), we find an analogous interest in setting these asymmetric patterns against a stable metric referent (depicted in both cases by rhythmic note values and vertical lines, depicting equidistant beats). Moreover, Arom

a.



b.

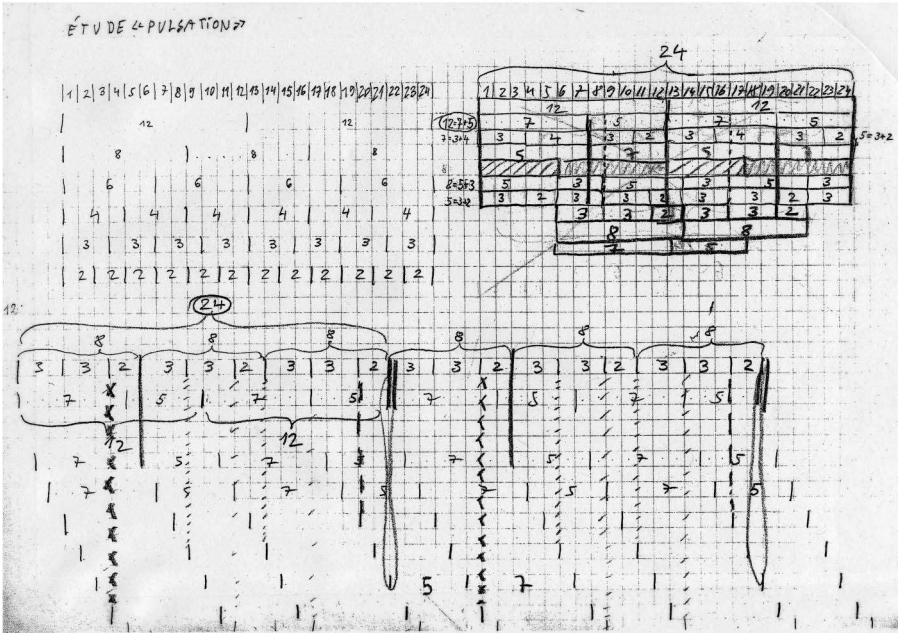


Figure 3 Two typical sketches of rhythmic patterns by Ligeti. Reproduced with kind permission of the Paul Sacher Institut.

is concerned at this point in his text to isolate a *structural identity* ('constructed with exactly the same systematic musical features') between African patterns, even if they appear to have different lengths and different note values (Arom, 1991, pp. 249–250). The sketches indicate that Ligeti is deeply aware of Arom's argument here. Notice, for example, how Ligeti superimposes an additional rhythmic layer in dotted-note values below the first two rhythms in Figure 3(a). In fact, a process of transformation-by-multiplication is basic to his compositional approach to rhythm in the piano etudes. As revealed by his sketches, the accentual patterns of left and right hands in the first etude, *Désordre*, for example, derive from a simpler 12/8

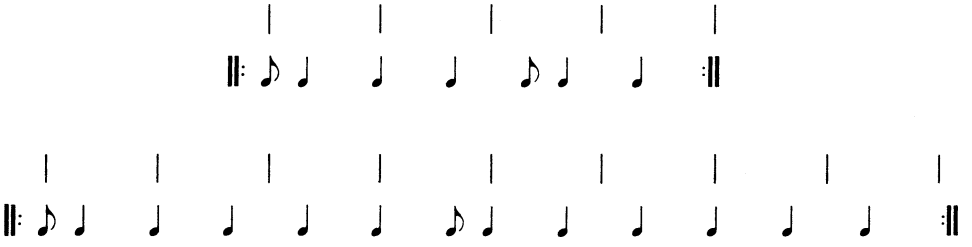


Figure 4 Two examples of 'rhythmic oddity' in Arom's *African Polyphony and Polyrhythm* (1991, p. 249). Reproduced with kind permission of the author.

rhythm set in canon, which he notated before arriving at the final version. Ligeti's sketch of the basic melodic profile of the opening measures of *Désordre* appears in Figure 5. Notice how the rhythmic profile of Ligeti's sketched rhythms bears a striking resemblance to the inherent rhythms produced by interlocking *amadinda* xylophones from Uganda (about which more below). For now, it suffices to point out that in *Désordre*, each eighth note in the sketch receives three pulses in the final score, while each quarter note receives five (see Figure 7). This multiplication process itself yields an additional layer of rhythmic oddity at the level of the measure—namely, $4-1=3/4+1=5$.

Ligeti enthusiastically acknowledges the influence of African and African-derived music on his compositional practice in general. On the topic of the distribution of accents ('Akzentverteilung') in *Désordre* in particular, he states:

> And if you look at the beginning—you will find pulsations of eight eighth notes—, already here we find the influence of Africa, $3+5$ pulses, and this kind of asymmetry is also found in Latin American commercial folklore, in the Brazilian samba, and in the Cuban rumba. There we find a combination of African thought processes with European barlines (Und wenn ihr den Beginn anschaut—es sind achtpulsige Takte, asymmetrisch verteilt—, da ist schon der Einfluß Afrikas, $3+5$ Pulse, und diese Art von Asymmetrie gibt es auch in der lateinamerikanischen kommerziellen Folklore, in der brasilianischen Samba und der kubanischen Rumba. Dort ist es eine Vereinigung von afrikanischer Denkweise mit europäischer Taktüberlieferung). (Burde, 1993, p. 191)

What are the precise reference points to these cultures in *Désordre*? To begin with, the physical hand movements involved in performing *Désordre* resemble the wrist technique used to perform *salsa* on the piano, while the asymmetrical distribution of accents recalls Arom's diagrammatic representations of contrametricity in African music in *African Polyrhythm and African Polyphony*.[16] Most importantly, the octave doublings, devised to cause illusory rhythmic lines to emerge out of the granulated flow, owe their origins to the workings of *ennanga* (harp) music of Uganda. By the early 1980s Ligeti had read about the music of Uganda in various published writings by Gerhard Kubik.[17]

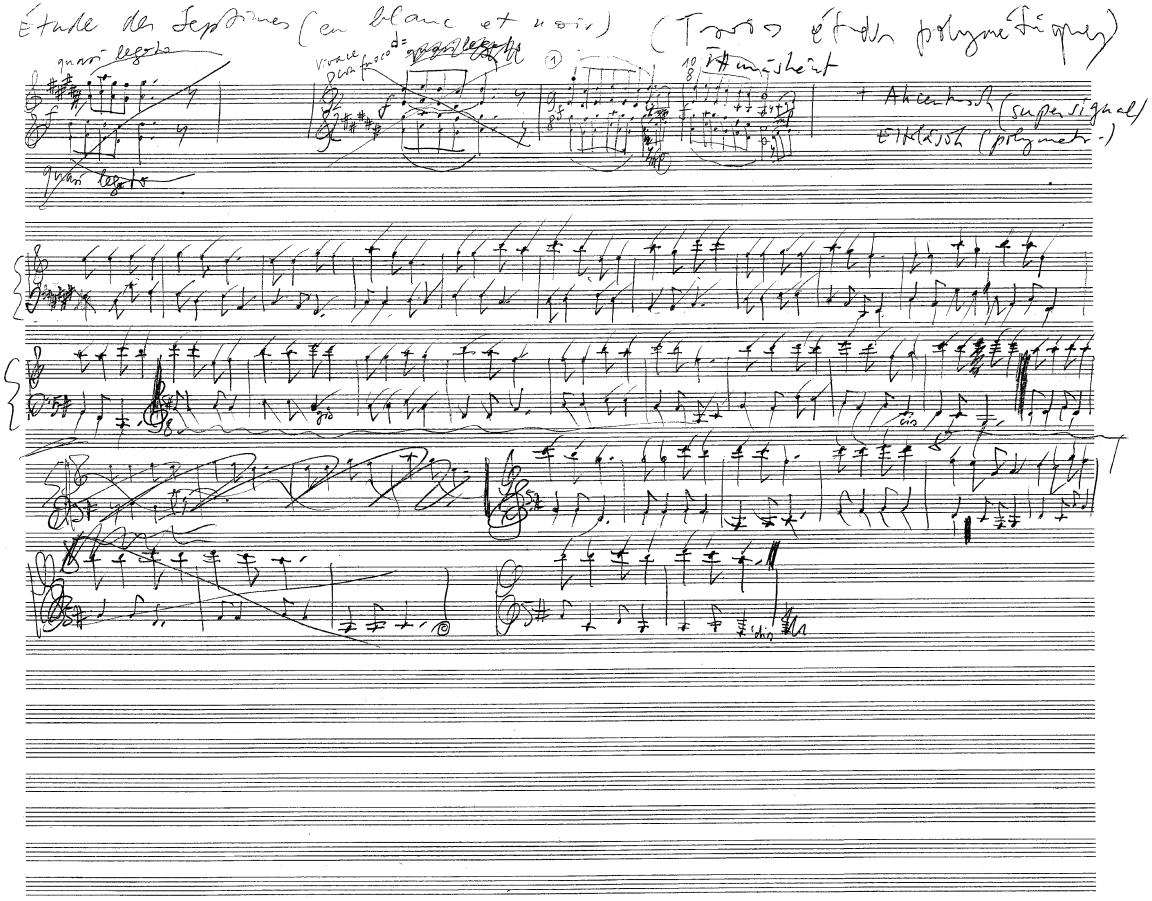


Figure 5 Ligeti's sketch of the melodic-rhythmic structure of Etude No. 1, *Désordre*. Reproduced with kind permission of the Paul Sacher Institut.

Ennanga music is closely related to *amadinda* xylophone music, both of which form part of a musical tradition associated with the royal courts of Buganda. In this music, the performer plucks the harp from both ends with thumbs and index fingers. Left and right hand parts, which exchange notes in hocketing fashion, are differentiated by name and rhythmic structure. Kubik's representation of '*Olutalo olw'e Nsinsi*' ('The Battle of Nsinsi'), a simple *ennanga* song recalling an eighteenth-century battle under King Junju, clarifies the polyrhythmic structure of the music (depicted here in Figure 6). The first part, which the Buganda call *okunaga* (meaning 'to start striking'), is played by the harpist's right hand and here elaborates a rhythmic field in an implied 3/2 time. The second part, called *okwawula* (meaning 'to differentiate'), is played by the harpist's left hand and here elaborates an implied 3/4 time. Strikingly, these differentiated rhythmic groupings occur within the spaces of one another so as to produce a pulse-based continuum spinning forth at incredibly high speed. The interaction between these two regular rhythmic figures engenders remarkably irregular resultant melodies. These 'hidden notes', which Kubik calls 'inherent melo-rhythmic lines', are depicted in Figure 6 as 'aural images' (Kubik, 1966/1967, pp. 21, 23).[18] These inherent rhythms, called '*okuyimba*' (meaning 'to sing'), are often doubled by the vocal lines accompanying the harp.

The asymmetrical melodic fallout results from two factors. First, the nesting of two differently grouped rhythmic patterns ('simple triple time', one might say, interlocking with 'compound time') yields rhythmic combinations within discrete registers of the harp which are no longer strictly perceptible in one or other metric

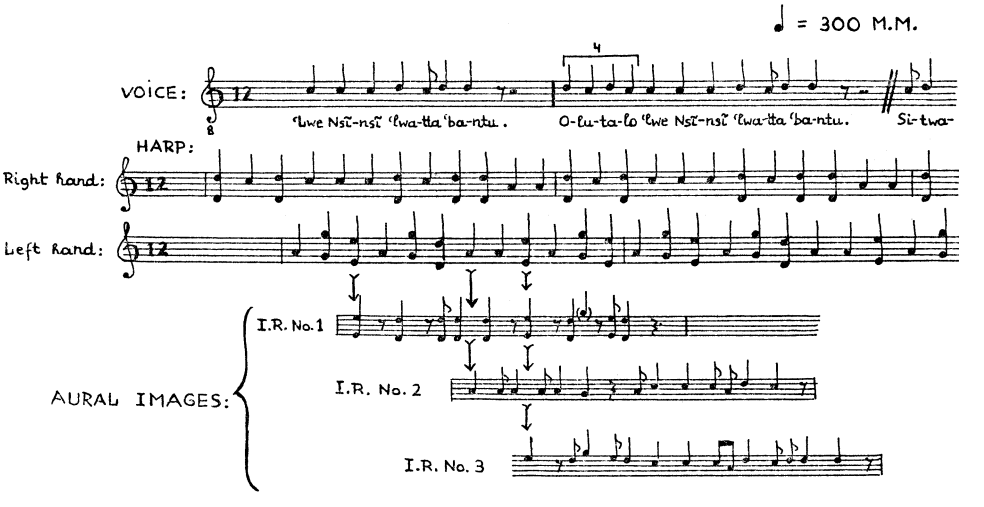


Figure 6 Kubik's representation of *ennanga* (Harp) music from Uganda: '*Olutalo Olw'e Nsinsi*' ('The Battle of Nsinsi') (Kubik, 1966/1967, p. 23). Reproduced with kind permission of *African Music*.

scheme alone. Ligeti amplifies this point, observing how, in African music, 'it is possible to beat both a duple or a triple meter to these rhythmic patterns by handclapping or, for example, with a percussion instrument' (Ligeti, 1988, p. 5). Second, a series of loosely irregular octave doublings in each hand, produced by striking the harp with indices and thumbs simultaneously, causes an additional unpredictable line to emerge from the pulsing flow. In *Désordre* Ligeti uses the technique of staggered octave doubling in the context of a pulse-based continuum to similar effect (see Figure 7). Of course, the pitch-space of *Désordre* is not directly derived from African music. And yet, here too Ligeti describes the use of complementary pitch collections (in *Désordre* we find a diatonic collection in the right hand, pentatonic in the left) as a compromise 'pseudo- or quasi-equidistant' arrangement of intervals, which approximates (without actually altering the tuning of the piano) various Asian and African tuning systems: 'For years,' Ligeti says, 'I have been deeply attracted to these, for us Europeans, so unusual harmonic and melodic formations' (ibid., p. 11). These 'Africanized' pitch constellations provide Ligeti with what he describes, in a related context, as an 'illusionary' untempered harmonic field on a tempered instrument (ibid., p. 11).[19] Hence the distortion of the actual African pitch-space thus aspires paradoxically to recapitulate some of its iridescent qualities.

Ligeti's description of this kind of African music could almost count as a description of his first etude:

> A completely different kind of metric ambiguity is to be found in African music.... Here, of course, there are no measures in the European sense of the word, but instead one finds two rhythmic levels: an underlying layer consisting of fast, even pulsations which are however not counted as such but rather felt, and a superimposed layer of occasionally symmetrical but more often asymmetrical patterns of varying length, though always whole multiples of the basic pulse.... The prevailing metric ambiguity produces, in theory at least, a kind of hemiola, which however in practice does not really exist: there can be no real ambiguity as there is no meter based in the bar-line...only the smoothly flowing additive pulse. (Ligeti, 1988, pp. 4–5).[20]

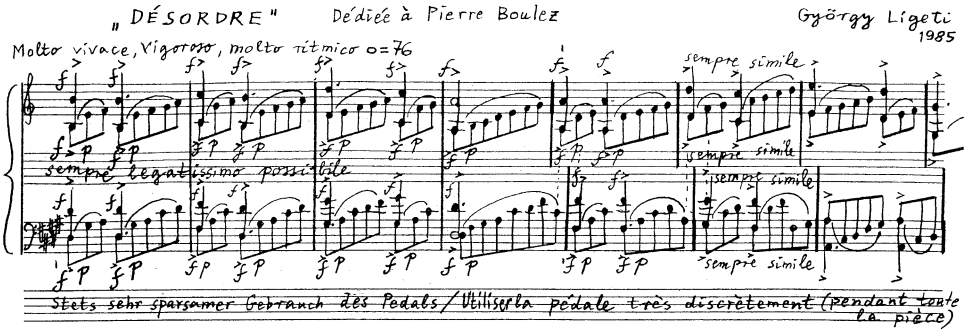


Figure 7 Ligeti's Etude No. 1 (*Désordre*), mm. 1–7.

As it does in *ennanga* music, then, *Désordre* eschews traditional barlines, elaborating instead an uninterrupted flow of vigorous pulses that are differentiated by a superimposed layer of asymmetrical accents and octave doublings. The irregular linear threads (or 'inherent patterns') emerging in *Désordre* owe their origin directly to the music of Uganda, as it was transcribed and analyzed by Gerhard Kubik. In his dedication to Kubik, written on the first page of the *Festschrift* on the occasion of Kubik's sixtieth birthday, for example, Ligeti acknowledges his great debt to the Austrian: 'Dear Mr. Kubik, your discovery of INHERENT PATTERNS has immense importance for my compositions' ('Lieber Herr Kubik, Ihre Entdeckung der INHERENT PATTERNS hat immense Wichtigkeit für meine Kompositionen') (Schmidhofer & Schüller, 1994, opening page, capitals in original). Simha Arom's work on African polyphony proved to be an equally important source of inspiration for Ligeti. In *Désordre*, for example, the complex resultant layer of inherent patterns becomes further convoluted by the gradual displacement of left- and right-hand phrases: a phasing technique described and illustrated by Arom in *African Polyphony and Polyrhythm* (Arom, 1991, pp. 297–298). These phrases are transposed to different scale degrees as the phasing process unfolds. Here it is possible that Ligeti was thinking about the *miko* transpositions much beloved by Baganda musicians (see Figure 8). Notice how the transpositions metamorphose as a result of the physical structure of the *amadinda*. As it is in Ligeti's etude, we thus find a systematic music that seems to encounter its formal limits by way of a physical

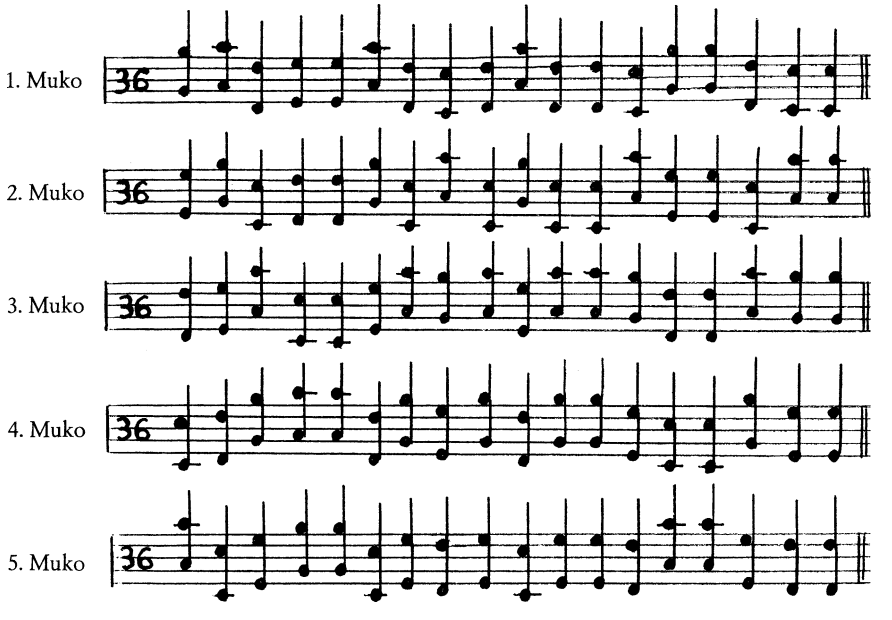


Figure 8 *Miko* transpositions of the core theme of the *Amadinda* tune "Ssematimba ne Kikwabanga" ("Ssematimba and Kikwabanga") (Kubik, 1983, p. 152).

constraint.[21] But most of all, in his philosophical quest for 'illusionary patterns'—like 'picture puzzles, paradoxes of perception and ideas' set adrift from the music's basic organizational procedures—Ligeti once again finds resources and resonances in the conceptual workings of African music (Ligeti, 1988, p. 3).

VIII

Less mannered and extroverted than *Désordre*, Ligeti's twelfth etude, *Entrelacs*, performed alongside the Aka songs *Anduwa* and *Banga Banga* on the *African Rhythms* CD, nonetheless shares with *Désordre* a rapid pulse-based background of perpetual motion above and within which are superimposed various complex layers of polymetric accentuation. Once again, Ligeti uses complementary pitch collections—symmetrically inversional hexachords in this case—in left and right hands to generate an iridescent 'illusionary' harmony that seems to be cut of the same conceptual cloth as the rhythmic field.[22] Also, as in *Désordre*, Ligeti superimposes inherent patterns on the granulated flow by way of octave doublings and held notes. In *Entrelacs* the *quality* of inherent patterns is differentiated further than in *Désordre*. First, by articulating the polymetric layers with different note values (the first layer is emphasized by half notes, the second by quarter notes, and so on) and by constantly altering the interval of the emphasized notes (first by simple intervals, octaves, fifths and thirds, and then by fourths, sixths and sevenths as well), the interacting combinations result in less tangible contrapuntal lines (than we find in either *Désordre* or *ennanga*). Second, *Entrelacs* elaborates a more complex polymetric layering than any other etude. The music begins by superimposing thirteen pulses (in the right hand) against seventeen (in the left), followed by seven pulses against eleven (beginning in m. 10 and m. 12 respectively), and so on. Once again, we note the characteristic asymmetry between the two strands, expressible here as $n+2 / n-2$ ($15+2=17 / 15-2=13$; $9+2=11 / 9-2=7$). But unlike the polymeter of *Fém*, which explores interactions between only *two* such patterns, these polymetric layers increasingly overlay upon one another, confounding their own internal temporalities, and eventually silt up the evanescent pulsations with clanging bitonal chords. *Entrelacs* sets in motion a recursive musical formula that is then driven to an extreme. What begins as a spaciously elegiac melody of sparkling bells inexorably mutates into the unstoppable clatter of cursed machinery.[23]

While the headlong metrical mayhem that ensues in *Entrelacs* is a trademark of Ligeti's personal style resonant as much with Ligeti's interest in chaos theory and fractal geometry,[24] Ligeti attributes this particular extension of polymeter to his encounter with African music: 'For my more recent Piano Etudes . . . the now conscious awareness of several examples of this [sub-Saharan] music led me to the idea of extending the hemiola concept from three times two and two times three to include other relationships such as five to three, seven to five, etc. as well as multiple combinations . . . in all of which the bar-line is no longer a determining factor' (Ligeti, 1988, p. 5). The sketches leading to the composition of *Entrelacs* indicate a

considerable interest in the music of Cameroon, Ethiopia, Zimbabwe and Uganda. Many sketches include references to Africa, such as 'AFRIQ! 3 2 3 2 2,' or 'AFR POLY'. One sketch, dated August 1990, even suggests that Ligeti considered naming the etude 'Zimbabwe' at one point, and then also 'Mbira'.[25] As Figure 9 shows, these words appear above the sketch, crossed out and in quotation marks (indicating, in Ligeti's lexicon, a possible title).[26] Here Ligeti experiments with various interlocking lines of quarter notes in a pulse notation that recalls Tracey's transcriptions of *mbira* music, as shown in Figure 10. It is as if Ligeti began his experiments with *Entrelacs* by composing home-spun fragments of *mbira* music. In the final sketches Ligeti combines the interlocking lines into two continuous strands oscillating in left and right hands, upon which accentuations are placed to draw out inherent rhythms. Notice in the sketch reproduced in Figure 11 how the inherent patterns in *Entrelacs*—resounding by way of interpolated octaves, fifths, thirds, fourths, sixths and so on—bear a clear resemblance to the interpolation techniques in the *matepe mbira*, where left and right hands interpolate the pulsing flow with a near-identical constellation of intervals.

Ligeti's interest in Africa extends beyond music. The conceptual sources for *Entrelacs* probably include African *visual* culture as much as they do African musical culture. The word 'entrelacs' refers to a method of crafting designs through interlacing. While the word could refer to Celtic, French or Arabic knotwork, Ligeti seems to have had the sand designs of the Luchazi of eastern Angola in mind. In his dedication to Kubik, Ligeti writes, 'GREAT INFLUENCE!—the most beautiful and deep: your work on the TUSONA in Angola. You have changed my thinking. THANK YOU for ever! Your György Ligeti' ('GROßER EINFLUß!—das schönste und tiefste: Ihre Arbeit über TUSONA in Angola. Sie haben mein Denken verändert. DANKE für immer! Ihr György Ligeti' (Schmidhofer & Schüller, 1994, opening page, capitals in original). Ligeti is referring here to the geometrically structured ideographs, called *tusona* (sing. *kasona*), which are traditionally drawn on sand surfaces by Luchazi elders (*vakuluntu*). *Tusona* are constructed by an abstract grid of equidistant dots (called *mafundungwino*) impressed on the sand with the first and third fingers. An additional grid of similarly constructed dots is then superimposed within the spaces of the first grid. Finally, lines that pass through this lattice of dots along various trajectories are drawn by the index finger. Kubik notes that these lines often surround and circumscribe the dots in 'geometrically regular ways' (Kubik, 1987, p. 61). Figure 12 depicts two particularly striking *tusona*. The first of these, drawn by Mwangana Kalunga (entitled '*Vamphulu*' ['The Gnus']), is associated with a story of four gnus who seek to escape a scene of war (ibid., pp. 63–64). Kubik is struck by the abstract manner in which this philosophical tale is captured: 'It has an oscillating quality in which its components may ''shift'' in visual perception, i.e. as in a picture puzzle, one may begin to see changing images by associating the lines and dots in this or that manner' (ibid., p. 63). The second *kasona* (entitled '*Kalunga*' ['God']) is associated with many meanings: 'rain', 'anything without beginning and end', 'infinity' and so on. In Kubik's words, this

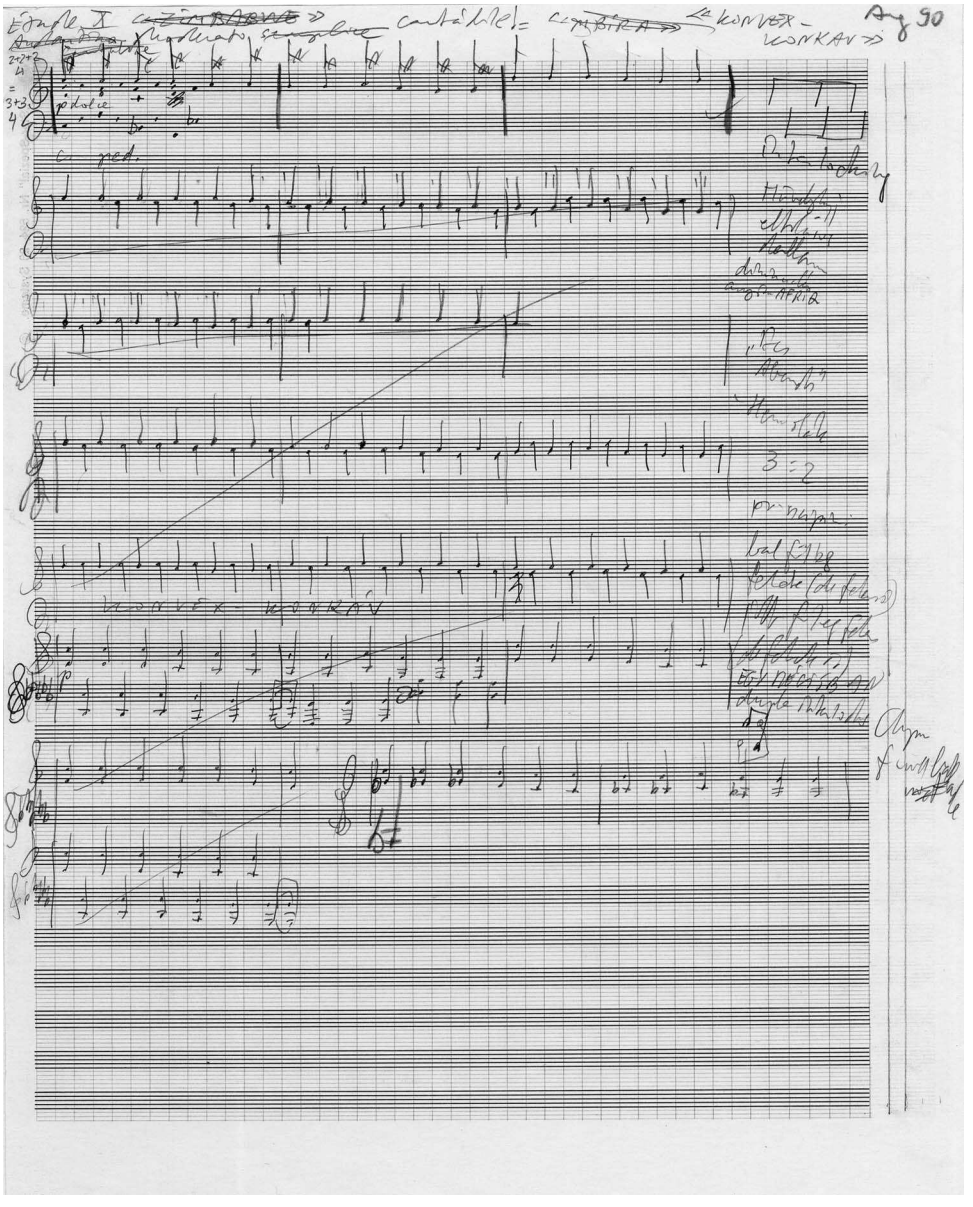


Figure 9 Ligeti's early sketch of *Entrelacs*. Reproduced with kind permission of the Paul Sacher Institut.

kasona, 'assumes the form of an aetiological myth, explaining how human death originated' (ibid., p. 70). Kubik describes how this drawing technique renders visible the 'inner . . . order in situations events, institutions and human interaction' (ibid., pp. 68 – 69). That is, the perceptual rearrangement of various trajectories in the

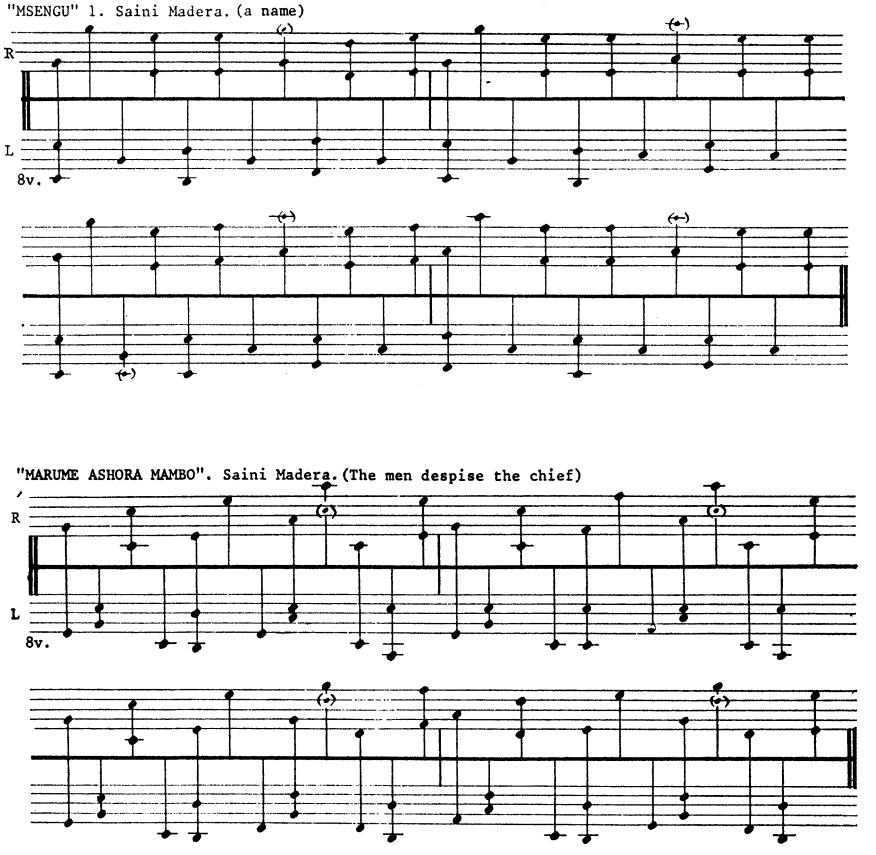


Figure 10 Two examples of Tracey's transcription of *Matepe mbira* music (1970, pp. 52, 57). Reproduced with kind permission of *African Music*.

tusona opens up perspectives on and associations with various animals, rituals, philosophical structures, and so on.[27]

As can be seen, the virtuosic 'odyssey of labyrinthine movements' in *tusona*, whereby a single line circumscribes ('interscribes', writes Kubik) numerous dots before returning to its starting point, produces patterns of remarkable intricacy and variety (Kubik, 1987, p. 73). Kubik speculatively associates these visual interscriptions with the formation of 'inherent patterns' in the context of two African *musical* traditions (ibid., pp. 81–87): *amadinda* xylophone music of Uganda and *timbrh* lamellaphone music of the Cameroon. For example, in an analogous context of equally spaced pulsations (correlated here with the equally spaced dots of the *tusona*), performers seated on opposite ends of the *amadinda* issue interlocking patterns of music (correlated with the superimposed grids), which form inherent phrases in the music (correlated with the encircling lines) that, in turn, become the basis for the texts accompanying the music (correlated with the projected content of the

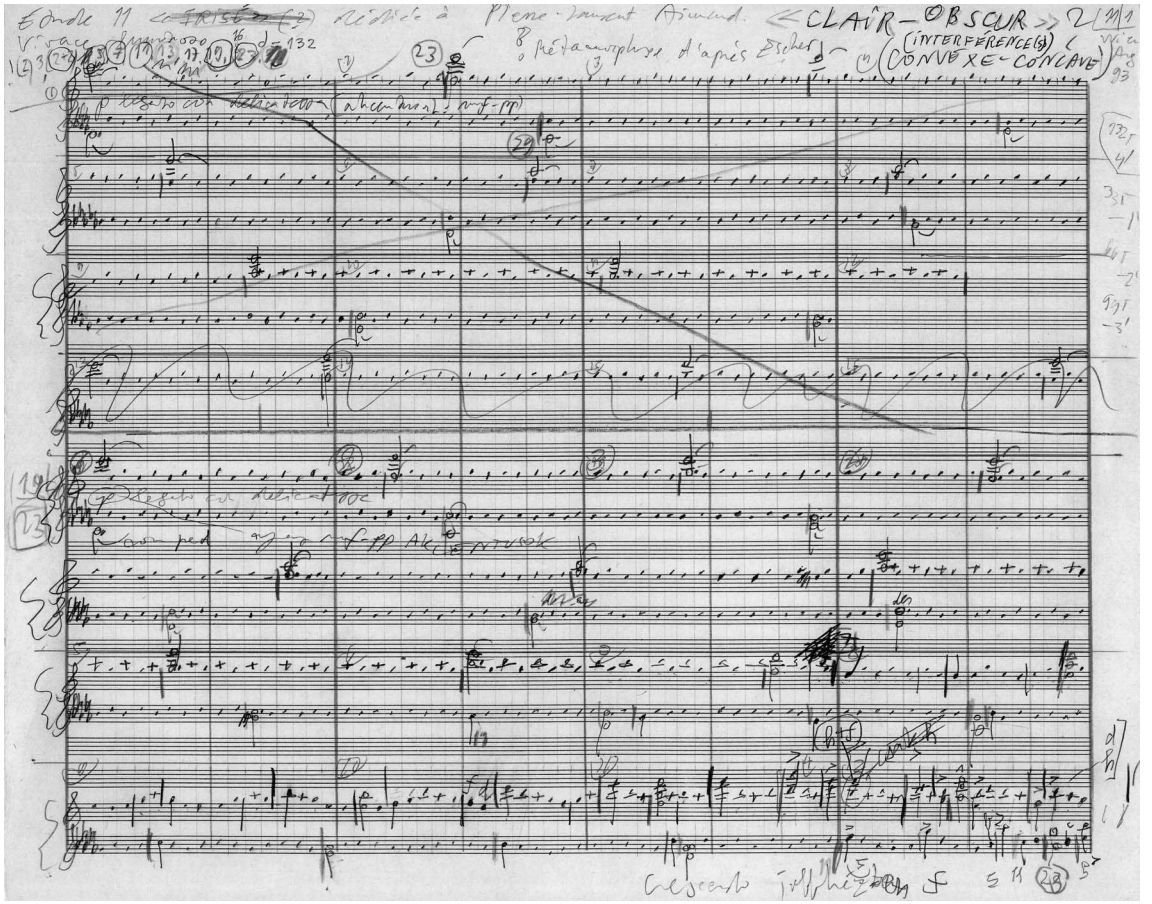


Figure 11 Ligeti's late sketch of *Entrelacs*. Reproduced with kind permission of the Paul Sacher Institut.

tusona). In *amadinda* xylophone music, the inherent patterns, brought to the ear by a third performer who picks out and duplicates aspects of the flow, tend to be irregular contrapuntal threads. This is the '*okukoonera*' part, meaning 'to knock on the top two keys' (ibid., p. 85). Figure 13 represents the inherent rhythms of the combined

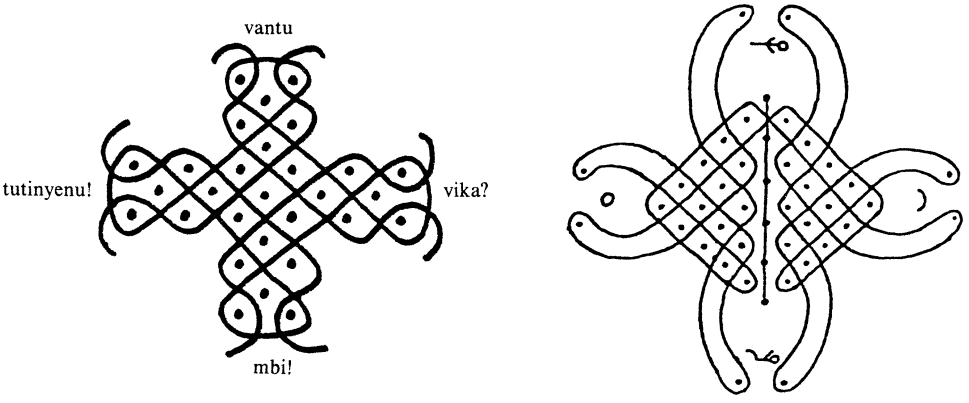


Figure 12 Two Luchazi *tusona* designs: '*Vamphulu*' ('The Gnus') and '*Kalunga*' ('God') (Kubik, 1987, pp. 63, 70). Reproduced with kind permission of *African Music*.

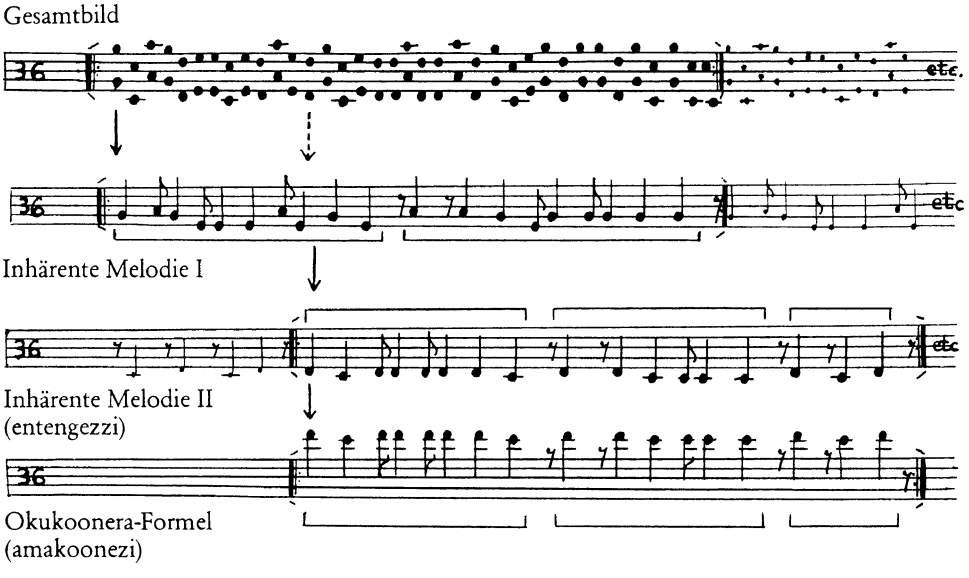


Figure 13 Inherent patterns in the *amadinda* tune '*Ssematimba ne Kikwabanga*' ('Ssematimba and Kikwabanga') (Kubik, 1983, p. 150). Reproduced with kind permission of *African Music*.

pattern of a typical *amadinda* tune, 'Ssematimba ne Kikwabanga,' a song about two princes. Ligeti describes this phenomenon as an encounter between the 'absolute symmetry of the [music's] formal architecture', on the one hand, and the 'asymmetrical internal divisions of the patterns' on the other: 'What we can witness is a wonderful combination of order and disorder which in turn merges together producing a sense of order on a higher level' (in Arom, 1991, p. xvii).

Kubik notes that, unlike those found in *amadinda*, the resulting designs ('inherent patterns') of most *tusona* are either 'left-right' symmetrical or 'quarternary' symmetrical, whereby the design can be mirror-inverted. 'This is not merely of theoretical interest' for Kubik: 'Some *tusona* have actually been collected mirror-inverted or upside down from different informants in this culture area' (Kubik, 1987, p. 74). *Entrelacs* seems to shuttle precariously between analogous fields of mirror-inversional symmetry, on the one hand, and asymmetrical ones, on the other. The pitch space of *Entrelacs*, for example, at first suggests a symmetrical field. The piece begins with the shimmering of a deceptively simple diminished seventh harmony, one that quickly becomes an inmate of a symmetrically conceived polytonal journey. In a manner that recalls Arnold Schoenberg's *Variations for Orchestra*, op. 31, the piece begins by elaborating increasingly complex oscillating sonorities in left and right hands that are exact pitch inversions of one another. The equidistance between the two collections becomes gradually disassembled, however, at first by the logic of the polymeter, and then almost haphazardly. Our perception shifts from the formal process to its immediate results, which seem to gather momentum of their own. By mm. 8–9, for example, the metric accentuations echo one another within their immediately shared time span (introducing, in turn, the interval of a seventh, and then a fourth) instead of reflecting one another by way of a dislocated symmetrical unfolding. Very quickly the interacting metric layers go awry, finally issuing a dispersed melody of chords in full *fortissimo* flight. *Entrelacs* thus offers a combination of order and disorder predicated on the very 'symmetry of the formal architecture', on the one hand, and the 'asymmetrical internal divisions' of its patterns on the other, that Ligeti found so compelling in African art and music.

IX

Interestingly, Ligeti claims to have developed his own pulsation-based rhythmic illusionism long before his encounter with African music. He frequently cites his solo piece for harpsichord *Continuum* (1968) as a forerunner to his piano etudes, which were consciously based on African music. In his Kubik dedication, Ligeti writes, 'UNCONSCIOUSLY I already ''composed'' inherent patterns in 1968 in my harpsichord piece ''Continuum''. But I only got to know the xylophone music of Buganda through you, in the middle of the eighties' ('UNBEWUSST habe ich inherent patterns ''komponiert'' schon 1968 in meinen Cembalo-Stück ''Continuum''. Aber Xylofon Musik aus Buganda hab ich erst durch Sie

kennengelernt, Mitte der 80-er Jahre') (Schmidhofer & Schüller, 1994, opening page, capitals in original). Likewise, in his essay 'On my *etudes* for piano', Ligeti explains how he had experimented with 'illusionary rhythm' in both *Continuum* and *Monument* for two pianos (1976) long before he knew about analogous processes in African music: 'While I was writing these pieces . . . I was unaware of . . . [music] of Subsaharan Africa. However, I have always had an interest in picture-puzzles, paradoxes of perception and ideas, for certain aspects of the shaping and building of form, of growth and transformation and for the distinction between various levels of abstraction in thought and language' (Ligeti, 1988, p. 3). In prose that echoes Kubik's description of the *tusona* ideographs of Angola, Ligeti asserts his artistic autonomy from the African influence. In *Continuum*, writes Ligeti, 'I came (*unconsciously*) close to the rhythmic conception evident in the music of Subsaharan Africa' (ibid., p. 5, emphasis added).

And yet, even in these seemingly non-Africanized early works, Ligeti probably owes a debt to African music. Sketches for *Continuum*, for example, indicate that Ligeti was not only aware of, but probably used as a primary point of departure, the early works of Steve Reich. In one sketch we find the words 'Pattern Phase / CONTINUUM + Cembalo'; elsewhere we find the words 'Kontinuumliche Gitter-Kompositionen (Entfaltungsform)' ('Continuum-like grid-compositions [expansion-form]'); and on the final draft of the score we find the words 'Riley', 'Glass' (struck through) and 'Reich'. Furthermore, the musical processes of *Continuum* seem to echo the kind of phase patterning we find in Reich's early works. While less systematic in approach, *Continuum* bears all the traits of Reich's signature techniques. Ligeti's piece is a hand-made, absent-minded example of minimalist process music. Likewise, in *Monument-Selbstportrait-Bewegung* for two pianos, the second movement of which bears the enigmatic title 'Self-portrait with Reich and Riley (and Chopin in the background)', the influence of Reich is patent. The point is that Steve Reich's compositional *oeuvre*, while characterized by overtly non-modernist ambitions, owes a considerable debt to African modes of music-making. Here it is in the early work of the 1960s and 1970s that we find borrowings of African techniques, styles and structures in the context of considerable quotation. In fact, Reich's youthful output can be characterized as a creative paraphrase of various western, central and southern African musical styles. The two items appearing on the *African Rhythms* CD, *Clapping Music* and *Music for Pieces of Wood*, for example, are built around Zambian clapping and drumming patterns systematically elaborated in the context of an African canon technique. Apparently unaware of Reich's own great debt to African music (in works as early as *It's Gonna Rain* [1965], *Piano Phase* [1966–67] and *Violin Phase* [1967]), Ligeti arrives at the mistaken conclusion that he himself had never encountered African musical processes before 1980.[28] And yet, these processes were to some extent embedded in works that inspired him. His 'unconscious' composition of 'inherent patterns' before 1980 was thus actually inflected by the mediated Africanized compositions of Steve Reich (and, to a lesser extent, Terry Riley).[29]

X

Of course, for both composers, certain features of traditional African music are eschewed and others are given pride of place in their works. The unique characteristics these composers discover in (or project onto) African music are also a reflection (or projection) of a cultural ethos outside of Africa. For Reich, African music opens avenues to a re-definition of music after modernism—one that foregrounds rhythmic processes in themselves. For Ligeti, African music provides the palette that awakens new modes of musical stasis that yield 'illusions' and 'associations' at the limit of the modernism/postmodernism debates. The *Ligeti/Reich/Aka Pygmy* project could be viewed as an acknowledgment of the African continent in the formation of these compositional ambitions. And yet, despite Ligeti's acknowledged references to African music, his output is mostly interpreted within a Western framework. To the extent that the African influence is acknowledged, the analyses of the latter music remain general. In such writing, the music refers less to the thematic recall of African textures and tunes themselves than to the formal assemblage and rearrangement of their abstract elements. Wholly shorn of its African meanings, the traditional historical tale emphasizes the music's generative procedures as abstract (albeit 'amalgamated') sounding forms.

In this project I have traced some of the African citations in Ligeti's etudes to *specific* source materials; described the original function and context of the music (even if they are not demonstrably known by the composer); and, to a lesser extent, assessed the ideological dimensions implicit in the *way* the African materials are put to use in a Western context. This article is not an attempt to discredit Ligeti's compositional endeavor; nor is it an assault upon the enormous literature on Ligeti; it merely joins the struggle for clarification. The question is: did the joint appearance of Aka musicians and the pianist Pierre Laurent-Aimard on the stages of the *Théâtre du Châtelet* in Paris and the *Kammermusiksaal* of the *Philharmonie* in Berlin contribute to redressing this lopsided textual production? Or did the choice to showcase Aka musicians, to whom neither Ligeti nor Reich owe a significant debt, encourage the very generality that characterizes the scholarly examinations of the composers' multicultural lines of influence? In other words, if the comparisons and affinities—the 'fine interplay of influences'—revealed by the juxtapositions on the stage were supposed to capture the precise empirical history of relations between these distinct musical worlds, we would have witnessed a concert in which Aka musicians play a diminished role (Aimard, 2003). To capture the genuine interplay of influences in *Fém* and *Entrelacs* alone, the event would have included instead Shona *mbira* players, Baganda *amadinda* xylophonists, *ennanga* harpists, *timbrh* performers from Cameroon and *tusona* sand artists from Angola, each carefully differentiated and then presented alongside the appropriate etude. Perhaps this non-existent concert could begin to cast fair perspectives on the innovative multi-cultural complexity of Ligeti's etudes.

Nonetheless, the complaint that the over-determined resonance of African music in Ligeti's etudes is paradoxically reduced by showcasing only Aka musicians alongside them should be weighed against the option of having no African musicians appear at all. To offer a misrepresentation is one thing, to make no representation is quite another. Thus, while the *Ligeti/Reich/Aka Pygmies* project bears many marks associated with a ludicrously compressed and invented view of Africa – typifying and generalizing an African musical practice, figured as unchanging, timeless and archaic, etc. – Ligeti's effort to produce new musical ideas thereby should be acknowledged. Not only do the etudes themselves carry fewer such marks than do the attendant descriptions of and notes to the project, but the music opens up new ways of hearing African music no less than Western music: the former as abstract art and the latter as embodied practice, to name one general example. Furthermore, Ligeti's 'Africanisms' are not exotic, appearing instead within the structurally embedded and richly amalgamated fabric of these works. Only a close examination of the formal dimensions of these works can unearth their multi-cultural lines of influence. The etudes thus offer an anti-spectacular exploration of African musical processes in the context of traditional European composition. The question is: does this aesthetic revision encourage the complex critical praxis required to allay the drastic inequality between Africa and Europe? Or does it encourage the all-too-often permitted ignorance that exacerbates it?

Acknowledgments

I would like to thank the Paul Sacher Institut and the Princeton University Society of Fellows for their generous assistance in writing this essay.

Notes

[1] The concert title *Diesseits von Afrika* probably resonates with the massively successful film *Jenseits von Afrika*, the German translation of the Oscar award-winning film *Out of Africa*, released six years earlier in 1985. *Out of Africa* is an autobiographical fiction based on the book by Isak Dinesen and Karen von Blixen, also known as 'Tania Blixen', and was published in London in 1937 and in New York in 1938. The story is set in the early twentieth century (1913 to 1931), when Europeans had settled most of the grasslands of Kenya (then known as British East Africa). It tells the story of Danish Baroness Karen von Blixen-Finecke's life on a coffee plantation, entangled in a network of relationships with her unfaithful husband (Bror Blixen), her true love (Denys Finch-Hatton), and the local natives. Although the author aspires, through Karen's lyrical travails, to demonstrate a deeper understanding and respect for African culture by the end of the story, the writing is inevitably filtered through an aristocratic frame, resulting in little more than an invented idea of African culture. The Kenyan novelist and critic Ngugi wa Thiong'o considers Blixen's novel to be a crude racist attempt to 'define the colonized world for the European colonizer' (Ngugi wa Thiong'o, 1981, p. 16).

[2] This point was made in a personal communication with the Puerto Rican composer Roberto Sierra.

[3] On the invention of African rhythmic complexity, see Agawu, 2003.

[4] As an inversion of the film title *Jenseits von Afrika,* it is possible that the concert attempts to distance itself from the lyrical exoticism of Blixen's imagined Africa.

[5] Reich is not clear about what 'thinking African' might mean, but tends to describe his dealings with African music in the metaphorics of 'musical structure' (about which more later in this article).

[6] Reich's writings offer an equivocal presentation of the music's philosophical import, which sometimes will vividly *conflate* 'structure' and 'sound' and other times will vividly *oppose* them. First, the idea that 'structural' borrowing is less ideologically charged than is 'sonic' borrowing is debatable. Second, Reich's compositional methods of borrowing from African music may not be 'structural' at all (even as in the terms set by the composer) as they most immediately involve quotations of rhythmic patterns from Africa. Most importantly, Reich's valuation of 'structure' over 'sound' (when it comes to describing his use of African music) contradicts a foundational aesthetic idea in his groundbreaking essay 'Music as a gradual process' (Reich, 2000, pp. 34–36). In this essay we find an outright dismissal of the traditional opposition between structure and sound. He writes, 'What I'm interested in is a compositional process and a sounding music that are one and the same thing' (ibid., p. 35). The two pieces on the *African Rhythms* CD, *Clapping Music* and *Music for Pieces of Wood*, at once outright quotations of African music and pure 'compositional processes', bear the marks of this contradiction.

[7] Ngugi wa Thiong'o's criticism of Blixen's novel also makes special mention of her demeaning use of animal imagery to describe native Africans. He points to a passage that compares the actions of Blixen's servant (Kamante) to those of 'a civilized dog, that has lived for a long time with people' (Ngugi wa Thiong'o, 1981, p. 18). As it is with Ngugi's critique of Blixen, Schomann's use of animal imagery demeans the Africans he claims to extol.

[8] Discussions of overarching African traits in music risk recapitulating the incoherent idea that such general traits actually exist. As will become clear by the end of this article, Ligeti's African influences can be traced to *individual traditions* that happen to be based in the African continent. I use the false generalization, 'Africa', as a strategically useful political *bloc*.

[9] To this extent, Ligeti's music is deconstructive, yielding to what Derrida calls the 'oblique' resonance of the 'tympanum'; music that 'repercusses its . . . limit . . . in sonorous representation'; music that 'attempts to think th[e] unheard-of thought' (Derrida, 1982, pp. xiii, xix, 22).

[10] See, for example, Simha Arom's collection *Musiques Banda*, Musée de l'Homme, Vogue LD 765 (1971).

[11] On the topic of African music, Ligeti writes, 'When I become interested in something, it becomes a passion' ('Wenn ich anfange, mich für etwas zu interessieren, wird daraus eine Leidenschaft') (Ligeti, 2003b, p. 136).

[12] Ligeti sharply distances himself from these two compositional schools: 'In composition we find the dichotomy between modern and post-modern (or avant garde and postmodernist), as in the arts. I feel outside of this. Even though I once belonged, to a small extent, to the Darmstadt circle: I am no follower of the avant garde; I was never a dogmatic defender of a particular direction' ('Es gibt in der Komposition die Dichotomie zwischen modern und post-modern (oder Avantgarde und Postmoderne), auch in den anderen Künsten. Ich fühle mich außerhalb. Obwohl ich mal ein wenig zum Darmstädter Kreis gehörte: ich bin kein Anhänger der Avantgarde, war nie dogmatischer Verfechter einer Richtung') (in Floros, 1996, p. 229).

[13] Although he implausibly compares it to pipe music of the Nama people, Peter Niklas Wilson argues that, of all the etudes, African rhythmic textures are most evident in *Fém* (Wilson, 1992, p. 64); likewise, Steinitz considers *Fém* to be the etude most obviously influenced by Banda-Linda polyphony (Steinitz, 2003, p. 300).

[14] In the score we read, 'There is no real metre here; the bar lines are only to help synchronization'. On the ambiguities of 12/8 rhythmic patterns in Africa, see, for example, David Locke's *Drum Gahu: A Systematic Method for an African Percussion Piece*.

[15] On 'inherent rhythms', see Kubik (1962).

[16] Ligeti's former student Roberto Sierra introduced the composer to this kind of Latin American pianism in Hamburg in the early 1980s (personal communication with Sierra). See also Arom's illustrations of asymmetrically distributed accents in various rhythmic patterns to clinch a point about contrametricity in African music (Arom, 1991, pp. 242, 244).

[17] See for example Kubik's six major articles in Artur Simon's *Musik aus Afrika: 20 Beiträge zur Kenntnis traditioneller afrikanischer Musikkulturen* (Berlin: Reiter Druck, 1983).

[18] The letters 'I.R.' in Figure 6 refer to the music's layered *inherent rhythms*.

[19] In *György Ligeti: Jenseits von Avantgarde und Postmoderne*, Floros describes Ligeti's forays into unique pitch collections based on, amongst various musics, the temperament of Chokwe music from Angola (Floros, 1996, pp. 74, 76).

[20] Indeed, in his description of the third movement of the piano concerto, Ligeti uses almost exactly the same language as he uses to describe African music: 'Above a rapid, regular constant fundamental pulsation appear through corresponding asymmetric accentual divisions various kinds of hemiolas and ''inherent melodic patterns'' (this expression was proposed by Gerhard Kubik with reference to sub-Saharan African music). When played at the correct tempo and with very clear accentuation, there appear in this movement illusionistic rhythmic-melodic shapes' (1988, p. 10).

[21] Ligeti's fascination for music in which the systematic aspect encounters a physical limit is well known. Regarding the piano etudes in particular, he writes: 'Given the anatomical limitations, it was necessary to allow the music to arise, so to speak, from the position of the ten fingers on the keys' (Ligeti, 1988, p. 6).

[22] In one of the sketches to *Entrelacs* we read the words 'Bitonalis Akustikus': a possible title for the etude? Steinitz refers to Ligeti's complementary construction of pitch-space as 'combinatorial tonality' (Steinitz, 2003, p. 281).

[23] Interestingly, the process of deformation and divergence is not the result of polymeter alone. Instead, the music gradually becomes deaf to its own structural processes and attuned instead to the actual *sound* produced by them. Let me explain. When the disaligned metric points of stress coincide, Ligeti—in step with the logic of the technique—adds a third note to that sonority. Consider the way the phasing process produces coincidences at various points in the music. For example, the quarter note and half note polymetric levels of the right hand coincide on the last pulse of m. 12 and again on the seventh pulse of m. 20. On both occasions, Ligeti adds an additional note, and we find a triad. And yet triads begin to appear on non-coinciding points as well, as in mm. 18, 20, 23, 24, and so on. It is as if the music responds to the results of its own logical procedures with destructive literalism. Like a computer virus, the music disassembles its own logic through exaggeration.

[24] Steinitz plausibly illustrates the analogy between Ligeti's music (in this case *Désordre*) and chaos theory thus: 'The study replicates a fundamental idea of chaos theory, that tiny differences in initial conditions lead rapidly to a complex outcome' (Steinitz, 2003, pp. 283–286). Citing research into computer programs for weather forecasting, Steinitz notes the huge discrepancies found in weather patterns when decimals are rounded off to three decimal places—a phenomenon known as 'the butterfly effect' (ibid., p. 286).

[25] Although this sketch is marked 'Etude X', it forms part of a collection of sketches that eventually became Etude No. 12.

[26] Other titles considered by Ligeti include 'Twighlight', 'Clair-Obscur', 'La Métamorphose', 'D'après Escher', 'Interférences', 'Convexe-Concáve', 'The Isle is Full of Noises, Sounds and Sweet Airs', and, as mentioned, 'Bitonalis Akustikus'. Whether Ligeti was aware that the South African composer Kevin Volans had written a piece entitled 'Mbira' is unclear. It is

certain, however, that Ligeti knew about Volans's African paraphrase compositions, as indicated by references to the latter in various sketches.

[27] Kubik relates this creative perceptual operation to the art of divination: 'What the *mukakusona* begins to see in those structures is in some way comparable to what a diviner (*mukakutaha*) "sees" in the configuration formed by the little objects in his *ngombo* (divining basket), although the *tusona*, of course, have nothing to do with divination' (Kubik, 1987, p. 69).

[28] For an analysis of Reich's uses of African music in *It's Gonna Rain* (1965), see my 'Curious Intersections, Uncommon Magic: Steve Reich's *It's Gonna Rain*', forthcoming in *Current Musicology*, *79/80*, 2006.

[29] To the extent that the issue is addressed, scholars and commentators unfailingly follow Ligeti's statements on the matter, citing the works *Continuum* and *Monument* as proof of Ligeti's independent arrival at the composition of 'inherent patterns' (see, for example, Burde, 1993, p. 185).

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