

# Xänorphica.

See *Sostenente piano*, §1.

## Xanthoudakis, Haris

(b Piraeus, 18 June 1950). Greek composer and musicologist. He studied with Varvoglis at the Hellenic Conservatory, Athens (harmony, 1964), privately with Papaïoannou (composition, 1966–71) and with Adamis (electronic music, 1972–3). After working under Hadjidakis at the Third Programme of Hellenic Radio, he undertook further studies in France with Xenakis, at the Centre d'Etudes de Mathématique et d'Automatique Musicales (CEMAMu) and at the Group de Recherches Musicales (1979–85). After returning to Athens he taught at the National Conservatory (1985–6) and the Athenaeum Conservatory (1987–93). In 1989 he co-founded (with the composer Kostas Moschos) the Institute of Research in Music and Acoustics. As a professor and coordinator of its music department, at the Ionian University, Corfu (from 1993), he gave a new impetus to research on Greek art music after the fall of Constantinople (1453) and 19th-century Ionian music.

Initially shaped by his keen interest in serialism and electro-acoustic technology, Xanthoudakis's compositions are characterized by emotional restraint and profound humour. By applying serial procedures to tonal material, in works such as the widely performed *Tango Plus-Minus* and the double bass concerto (1991, rev. 1996), he has found an unorthodox way in which to recover the trajectory of musical tradition. Such procedures aim, according to the composer, to unmask the fraud inherent in the aesthetic position of the serial avant garde.

### WORKS

(selective list)

Vocal: Eléni [Helen] (cant., Y. Seféris), mixed chorus, 1972; Argo (A. Embirikos), nar, orch, tapes, 1981; Sym. (A. Zakythinos), S, Mez, T, Bar, orch, 1992; 3 Songs (A. Pallis), children's chorus, 1993–4; Pictures at an Exhibition (textless), SATB, fl, a fl, 2 cl, a sax, t sax, tpt, 2 trbn, tuba, accdn, 2 gui, perc, vn, vc, tape, 1996; O Kreetikos [The Cretan] (D. Solomos), S, orch, 1998; Nekriki odhi [Funeral Ode] (D. Solomos), S, wind qnt, 1998; Mass (Messa Gregoriana), Mez, mixed chorus, orch, 1999; B-A-C-H (cant., no text), S, chorus, orch, 2000

Orch: Tpt Conc., 1977; Webern-Variationen, chbr orch, 1979; Concertante Variations, orch, 1981, rev. 1983; Palimpsest, chbr orch, 1987; Terra dove, orch, 1989; Db Conc., 1991, rev. 1996

Chbr: Rondo, vn, va, vc, 1971; Heterophony, tuba, pf, perc, 1973, rev. 1976; Concertante, ob, cl, bn, tpt, perc, str, 1974; Kondyliés, 3 perc, 1976; Sonatina, 2 fl, 1984; Conspirations sans silence, cl, 1985; Fantasia supra 'L'homme armé', fl, cl, vn, va, pf, perc, 1986; Tango Plus-Minus, chbr ens, 1986; Concertino, str, 1989; Modus ponens, fl, cl, tpt, euphonium, pf, vn, vc, db, 2 perc, 1991; Wind Qnt, 1994; Divertimento, cl, vn, va, vc, 1996; Divertimento, 8 brass, 1996–7

El-ac: Organum, ens, tape, 1971; Study 1, 3 synth, 1972; ViolonCelloStimmen, vc, perc, elecs, 1977; Couple T.S., pf, elecs, 1981; La troute, tuba, tape, 1981; ... un

aubregon de fer ..., tuba, synth, 1982; Organum 2, elec gui, synth, 1983; ... mee monan opsin ... [... not only thy face ...], ob, tape, 1986; Le sommeil de Dédale, chbr orch, tape, 1986; Haydn-Variationen, tpt, elecs, 1987; Les visages de la nuit, db sax, tape, 1989

Tape: Study 2, 1973; Oresteia, 1975; Study 3, 1980; Waste Land, 1980; Anamorfosseis [Reformations], 1984; Comment(ari)um, 1984; L, comme Bunuel, ou la forêt des symboles, 1984; La dame aux camélias, 1985; Paraphrases, 1985; Perigordion, 1985; Le voyage de Cyrano, 1985; I alligoria ton oron [The Allegory of the Hours], 1987; I ores [The Hours], 1987; Mix-Ages, 1987; Ou symphonia, ou melodia, oudhé moussiki [Neither Consonance, Nor Melody, Nor Music], 1987; Motetus, 1988; 1 ... 789, 1989; Paradromi [Inadvertence], 1989

## WRITINGS

'Mia ennoiologhiki anadifissi sti theoria tis moussikis' [Semantic research in music theory], *Echos*, no.13 (1974), 56–9

'Kinimatografos ke moussiki: i periptossi tou Mauricio Kagel' [Cinema and music: the case of Mauricio Kagel], *Film*, no.18 (1979), 111–19

*Aspects de la signification du timbre dans la musique du XXe siècle* (diss., U. of Paris, 1981)

'Les origines de l'orchestration moderne', *Revue internationale de musique française*, no.18 (1985), 22–8

'Et in Arcadia ego: metamodernismos ke paradossi sti simerini moussiki' [Et in Arcadia ego: postmodernism and tradition in today's music], *O politis*, nos.81–2 (1987), 110–11

*Keimena ya mia litourghiki theoria tis moussikis* (Athens, 1992)

'Mantzarou tychae' [Destinies of Mantzaros], *Porphyras*, no.75 (1995), 25–34

'I proti istoria tis neoellinikis moussikis' [The earliest history of modern Greek music], *Porphyras*, no.79, (1996), 83–90

GEORGE LEOTSAKOS

## Xenakis, Iannis

(b Braila, ?29 May 1922). French composer of Greek parentage. He belongs to the pioneering generation of composers who revolutionized 20th-century music after World War II. With the ardour of an outsider to academic musical life, he was one of the first to replace traditional musical thinking with radical new concepts of sound composition. His musical language had a strong influence on many younger composers in and outside of Europe, but it remained singular for its uncompromising harshness and conceptual rigour.

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#### 1. Early life.

The eldest child of a Greek businessman, he was born in Romania, and at the age of ten was sent to a boarding school on the Greek island of Spetsai. An outsider there, he immersed himself in science and Greek literature, both of which were to become lifelong interests. His early musical experiences were various: at home he heard classical piano music played by his mother and the music of gypsy bands; on Spetsai he encountered Byzantine liturgical music and Greek folk music and dance; he also sang in the school choir (whose repertory included works of Palestrina), and absorbed classical music from the radio. Later, during World War II, a comrade in the Greek Resistance was to introduce him to the music of Bartók, Debussy and Ravel.

In Athens at 16, while preparing for the civil engineering entrance examination to the Athens Polytechnic, Xenakis took lessons in piano and music theory. He entered the Polytechnic in the autumn of 1940, but it closed following the Italian invasion of Greece in November of that year, and closed again several times during the course of the war. At first Xenakis took part in right-wing nationalist protests, but at the end of 1941 he joined the resistance of the communist-led National Liberation Front (EAM) against the German occupation (April 1941 to October 1944). He took an active part in mass demonstrations against, among other things, the German confiscation of all food supplies (which caused thousands of deaths in the winter of 1941–2) and the attempts to deport Greeks to carry out forced labour in Germany in February 1943. One photograph of this time shows Xenakis marching in the front row of a demonstration (Matossian, 1981). Later in his life, the composer was to speak of his experience of acoustic mass phenomena in these events, such as the way rhythmically regular shouts turned into chaotic screams of fear when the Nazis opened fire.

British forces arrived in Greece in mid-October 1944 to eliminate the EAM and restore the Greek monarchy; and in December of the same year, as a student in the 'Lord Byron' unit, Xenakis took part in street fighting against British tanks. He was seriously wounded when a shell hit him in the face. While he was in hospital, the EAM lost its political and military power, whereupon the 'White Terror' was unleashed on former Resistance members. In spite of his wartime experiences, Xenakis gained his diploma in February 1946. He was then conscripted into the national armed forces, where he heard for the first time of the concentration camps to which former Resistance fighters were being sent; he deserted and went into hiding. Condemned to death (his sentence was in 1951 commuted to ten years' imprisonment) and stripped of his Greek citizenship, he managed to reach Italy with a false passport in September 1947, and illegally crossed into France in the hope of reaching the USA. However, he was forced to remain in Paris as an illegal immigrant with no material resources of any kind.

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## 2. Architecture.

To earn his living, Xenakis worked until 1959 in Le Corbusier's studio, at first as an engineer, but gradually playing a greater part in architectural design. He designed the kindergarten on the roof of the residential block in Nantes-Rézé, parts of the government buildings in Chandigarh, India, the rhythmically articulated glass façade of the monastery of St Marie de La Tourette, near Lyons, and the greater part of the chapel there. Finally, he was responsible for the unique shape of the Philips Pavilion at the 1958 Brussels Exposition Universelle, based on a sketch of Le Corbusier.

Most of his later architectural projects were intended for musical uses: a concert hall and studio for Scherchen's musical centre in Gravesano (Ticino) in 1961 and the same for the Cité de la Musique in Paris in 1984; but the only design to be realized was the *Diatope*, one of his invented *Polytopes*. The space for a unique sound-and-light experience, it comprised a tent-like construction which was erected outside the Centre Pompidou in Paris for its opening in 1977 and later re-erected in Bonn for a Xenakis festival.

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## 3. Musical research.

In Paris, Xenakis tried to compensate for the musical education he had missed during the war through self-directed study by taking lessons with Honegger and Milhaud. He also attended Messiaen's analysis course at the Conservatoire (1950–52). Between 1955 and 1966 Scherchen repeatedly invited him to Gravesano, where he met musicians and experts in electro-acoustics (including Max Mathews). The articles Xenakis contributed to Scherchen's *Gravesaner Blätter* formed the basis for his book *Formalized Music* (the first edition, in French, appeared in 1963). From 1957 to 1962 he worked in Schaeffer's Groupe de Recherches Musicales (GRM; until 1958, Studio d'essai de la Radio-Télévision Française), where he realized his early electro-acoustic works. Invited to Japan in 1961, he received there enduring impressions of Asian musical culture which strengthened him in his idea of 'universal musical structures'. In 1962 Xenakis composed a group of instrumental works with the help of a computer at IBM Paris (Schmidt, 1995, Baltensperger, 1996). In order to extend his research into the nature of sound itself with the help of the computer, he founded EMAMu (Equipe de Mathématique et Automatique Musicales) in 1966, which in 1972 became CEMAMu (Centre d'Etudes de Mathématique et Automatique Musicales). From 1967 to 1972, Xenakis taught at Indiana University in Bloomington, where he also directed a Center for Mathematical and Automated Music. He was a visiting professor at the Sorbonne (1973–89), and was awarded a doctorate there for his interdisciplinary research (*Arts/Sciences: alliajes*) in 1976.

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## 4. Works overview.

Unusually, Xenakis's first compositions were for orchestra, a medium which enabled him to realize his conception of sound masses; only later did he turn to smaller ensembles and solo instruments. He initially preferred writing for strings because of their abundance of sound colours and ability to move seamlessly between pitches. But from the late 1960s on, he has also required

woodwind and brass to play glissandos. He did not turn to the piano until he began to use 'finite' sets of pitches in *Herma* (1961).

Beginning with *Nuits* (1967–8), Xenakis treated the human voice like an instrument with pizzicato-like accents, consonantal and guttural articulation of abstract phonemes, and extremely demanding ranges in dynamic and pitch. At the same time he entertained an ideal of untrained, 'peasant' voices, especially for his musical conception of ancient theatre, in which singers also play bells, gongs, stones and so on.

His writing for percussion began in earnest first with *Persephassa* (1969) and then in a series of powerful, innovative works in the 1970s and 80s (for *Pléiades* he invented a new instrument – the 'Six-Xen').

Of singular importance to Xenakis's work is the dimension of physical space. The first signs of this were in *Pithoprakta* (1955–6) in which the concluding unison is distributed around the string section in very high harmonics. The brass sounds are similarly treated in *Eonta* (1963–4), while in *Terretektorh* and *Nomos gamma* the audience is placed among the members of the orchestra who are dispersed around the performance space. Nevertheless, Xenakis subsequently concluded that the best way to control the spatial dimension was through the use of loudspeakers, as with the several hundred used in the Philips Pavilion, or in several of his later *Polytopes*, above all in the *Diatope* (1977).

Though Xenakis's music is often extremely elaborate in detail, that detail is essentially at the service of the whole, this is particularly evident in the specific manner of the creation of the compositional algorithms ST (Free Stochastic Music) and GENDYN (Dynamic Stochastic Synthesis). Form never emerges from the development of thematic cells but from the collage-like succession or superimposition of segments that display strong internal connections, although heterogenous material is sometimes interpolated as well. The proportions of the parts and the ebb and flow of tension in a work are determined with an infallible instinct for musical dramaturgy.

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## **5. Early works.**

This period includes everything before *Metastaseis* (1953–4), which was detached from a triptych called *Anastenaria* to mark the beginning of the 'official' output. (*Anastenaria* also comprised two other quite substantial works, *Procession aux eaux claires* and *Sacrifice*, inspired by northern Greek festivals of pre-Christian origin). Youthful essays in composition appear not to have survived, though among them Xenakis has mentioned the monodies *Odes de Sappho* (Varga, 1982). The early works have not been published (although they have been studied, by Mâche in Restagno 1988; Solomos, 1996; and Baltensperger 1997), with the exception of *Zyia*, which was printed and performed in 1994. These pieces reflect Xenakis's early ambition to emulate Bartók by founding a contemporary 'Greek' music, and approaching the traditional musical heritage with a systematic analytical eye, without renouncing contemporary compositional techniques of Western modernism. This project was expounded in the article 'Provlímata Ellenikis Mousikis Synthesis' ('Problems of Greek music composition'). The elements of Greek folk music that were adapted include the use of certain modes, parallel 4ths,

the specifically northern Greek type of vocal polyphony, and the unequal additive rhythms (*aksak*). Xenakis's sense of structure and 'formalization' reached its peak in *Sacrifice*, a 'mechanism' based upon a Messiaenesque *mode de valeurs* with the help of a Fibonacci series (see [Fibonacci series](#)). Fibonacci series also determine the time structures of *Metastaseis*, which resemble, in some respects, the rhythmic spacing of glass panels on the façade of the monastery of La Tourette (cf Baltensperger, 1996, p.303).

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## 6. 'Metastaseis'.

Most of the fundamental musical problems, as he perceived them, were confronted by Xenakis in *Metastaseis*. In effect, he laid the foundation here for his entire musical career with the concept of 'sound composition', described in the essay 'Les Métastassis': 'The sonorities of the orchestra are building materials, like brick, stone and wood ... The subtle structures of orchestral sound masses represent a reality that promises much'. In the same essay Xenakis translates the Greek *metastaseis* as 'transformations', referring to the continuous evolution of massive glissando structures on the one hand and the discontinuous transpositions and permutations of pitches on the other. The concept of 'transformation' – in a strictly mathematical sense the interrelations between musical structures (where structure is to be understood as a set of relationships between musical parameters) – is central to Xenakis's thought. Its manifestations include transformations of geometrical figures (group theory), scales (sieve theory), melodic outlines (random paths), polyphonic structures (arborescences), spectral screens (granular synthesis) and wave forms (stochastic synthesis).

Xenakis's plotting of the massed glissandos of *Metastaseis* on ruled millimeter graph paper reflects his basic concept of a musical 'space-time': with pitch on the y axis 'ordinate', and time on the x axis, a two-dimensional space is created in which potentially time-independent musical structures can be contained in a temporal setting. As in Einstein's theory of relativity, time becomes a mere dimension in a homogeneous, isotropic space, not distinguished in any way from the dimension of pitch. (This is very important for the later geometrical transformations of such structures as arborescences).

For the composition of the middle section of *Metastaseis* Xenakis developed a highly idiosyncratic dodecaphonic technique. In his space-time concept, the pitches are associated with 'differential' durations from the Fibonacci series. Pitch manipulation within 12-tone rows is determined by the systematic use of mathematical permutations of row segments; the transposition of rows through rotation; and the concept of the 'diastematic series' based on the six interval classes rather than the 12 pitch classes. *Metastaseis* is the first work in which Xenakis constructed ruled surfaces in a two-dimensional projection. These surfaces may be understood as straight line paths bent along curved trajectories. Besides their use in later works (such as *Syrmos* and *Stratégie*), they define the unique shape of the Philips Pavilion, conceived by Xenakis as the setting for Varèse's *Poème électronique*, and Le Corbusier's picture projections for the Brussels Exposition Universelle of 1958.

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## 7. Macroscopic stochastic music.

In his article 'La crise de la musique sérielle' (1994), Xenakis rejected serial method as unsuitable for his compositional objectives. At the same time, like the serialists, he followed Messiaen's example in retaining the independent structuring of individual musical parameters. This manifesto was, in fact, less of a polemic against serialism and more the renunciation of traditional polyphonic part writing, in order to establish the complete independence of sound events within sound masses. This independence is the theoretical precondition for the applicability of the kinetic theory of gases to musical composition. (According to this theory, the temperature of a gas derives from the independent movement of its molecules.) Xenakis focussed his compositional process upon the large-scale features – such as outline, density or temperature – of whole 'clouds' of sounds, like the pizzicato-glissando clouds in *Pithoprakta*, and their alteration in time. By means of stochastic distribution functions the macroscopic properties of the mass are linked to its microscopic structure: each sound-particle of the score is precisely defined, yet contributes to the overall sound impression in its own individual way.

In *Achorripsis* (1956–7) Xenakis formalized his stochastic method to a point where it could be automated by means of a computer programme, with the help of which he was able to generate the family of ST compositions in 1962. In addition, he experimented with 'injecting memory into the stochastic method' (Varga, 1982): by means of transitional probabilities (the Markov chain), he established a dynamic equilibrium between musical 'states' and then disrupted it, following a predetermined plan (e.g. in *Syrmos, Analogique A and B*). Stochastics were also used to create sound textures employed in the musical 'games' *Duel* (1959) and *Stratégie* (1962), using a mathematical game theory developed for the simulation of situations of military or economic conflict (Schmidt, 1995); for the presentation of unordered pitch sets in *Herma* (1961); for the piano solo of *Eonta* (1963–4); and for the gigantic glissando fields of *Nomos gamma* (1967–8). Such ideas continue to play a part in Xenakis's most recent music, though no longer necessarily applied with precise calculation.

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## 8. 'Symbolic music'.

Stochastic music may have led to the control of sound masses, yet the determination of the notes themselves had no other foundation than the application of the kinetic theory of gases to musical objects. In this crisis of fundamentals, Xenakis turned to logic and sets – much as mathematicians had around 1900 (Eichert, 1994). The goal of this project, entitled 'Symbolic Music', was the foundation of a musical high-level calculus in which the concrete dimensions (i.e. the musical parameters) are abstracted and rendered into algebraic forms. Only after this process are they given a musical interpretation. This 'syntactic' treatment of musical structures entailed emptying them of any significance normally attributed by musical tradition. The abstract formalism underlying the manipulation of pitch sets in *Herma*, for example, was subsequently extended to the investigation of the regular proportions of complex scales (sieves), by imposing a group structure on the sets (the set of whole numbers). In *Nomos alpha* (1966) and *Nomos gamma* (1968) regular proportions (symmetries) are also explored in two and three dimensions with the help of geometrical transformation groups, which guide

the sound-constellations in time or in a multiple counterpoint. Unlike Messiaen's modes, which establish symmetries within the octave, sieves explore asymmetrical scales which reject octave equivalence and generate seemingly chaotic structures. The analysis and synthesis of the sieves was later automated by a computer programme (given in *Formalized Music*). During the 1960s and 70s, Xenakis's preference was for sieves constructed of microintervals (some as small as eighth-tones). 'Tempered' sieves appeared later with the *pelog*-like scale of *Jonchaies* (1977), *Aïs* (1980) and *Shaar* (1983), and applied to other musical parameters as well, especially to duration.

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## 9. Ancient theatre and Polytopes.

Instead of composing operas, Xenakis developed his own vision of a 'synthesis of the arts' on the basis of ancient drama, as in his *Oresteïa* (1965–6), to which were later added *Kassandra* (1987) and *La déesse Athéna* (1992) to complete Aeschylus' trilogy. In his programmatic text 'Notes sur la musique du théâtre antique' he expounds the idea of an 'abstract general singing', which derives from the formalization of structures 'invariant in space and time' (*Arts/Sciences: alliages*); this includes, then, both Xenakis's conception of recitation in the ancient theatre and his experience of the same in Japanese *kabuki* and *nō*. (The flexible pitches of Asian music may also have caused the softening of rigid glissandos into the elegant, curved lines which were later to join together in the branching structures of arborescences.)

One particular motivation for bringing the arts together in an organized 'manifoldness' was Xenakis's perception of their underlying common 'fundamental' structures, such as the abstract structure of total order. In his *Polytopes* (Revault d'Allonnes, 1975) as well as music Xenakis organized 'clouds' of light sources, the movement of laser-beams in space and the rhythm of electronic lightning flashes, at first by mechanical means, later using computer programmes. In addition to the few projects that were realized, such as the *Diatope*, there are others which remain utopias. These include a net of sound and light spread out above Paris, and the use of intercontinental satellite technology to illuminate the dark side of the moon or to generate an artificial Northern Lights. (The second idea had been planned for the bicentennial of the USA.) (*Musique – Architecture*, pp.181–91; *Arts/Sciences: alliages*, pp.11–18).

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## 10. Microscopic stochastic music.

At Bloomington, Xenakis used a computer to realize his particular idea of sound synthesis, which consisted of stochastically manipulating the electric sound signal directed towards the loudspeakers. Once again this experiment was documented ('New Proposals in Microsound Structure', *Formalized Music*): 'We can imagine the [sound] pressure variations produced by a particle capriciously moving in a non-determinate way around positions of equilibrium along the sound-wave ordinate'. Here the macroscopic aspect of probabilities (the law of large numbers, which levels out the probability fluctuations on the large scale) is replaced by the microscopic aspect (the dramatic accumulation of probability fluctuations in time): instead of the



behaviour of the whole cloud, the object of attention now is the random path of a single particle inside the cloud.

Until the 1990s, Xenakis produced little electro-acoustic music with the aid of these theories, but he used the idea of random paths for the creation of capricious pitch movements in works such as *Mikka* (1971) and *Mikka S*, partly by transferring computer printouts of synthesized sounds directly into a continuous sequence of glissando curves. In *Cendrées* (1973) and *N'shima* the glissando curves are broken up to achieve a unique expressive effect, especially for the human voice, while other structures result from the technique of 'polygonal variation', by which a melodic contour, represented in two-dimensional pitch-time space by an open polygon, is incessantly reshaped, each vertex of the polygon being subjected to separate random displacement (e.g. in *Jonchaies* and *Ikhoor*). Such random paths represent the most general way of defining continuous melodic lines or chains of randomly plotted notes, as in some sections of *Mists* (1981).

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### **11. 'Morphological' compositions.**

Having initially rejected linear polyphony in his stochastic experiments, in the 1970s Xenakis tried instead to modify it by designing complex, coherent linear structures, or 'arborescences', beginning with *Evryali* (1973). Keyboard instruments, with their discrete pitches, seem in particular to have challenged his imagination in relation to the idea of a coherent continuity. The piano concerto *Erikhthon* (1974) for instance, in which the orchestra plays some of the piano's arborescences as glissando chains, might be interpreted in this context as a dialectical treatise on continuity and discontinuity in music. Arborescences are regarded by Xenakis as a 'general extension of the polyphonic principle' (see his commentary on *Gmeeoorh*, 1974). They describe a 'branching' in time, a multiple fanning-out of a single voice into a 'thicket' of many voices: the four orthodox serial transformations – transposition, inversion, retrograde and retrograde inversion – are embedded in a generalized geometric transformation group, which also embraces rotation in space and time, enlargement and reduction. In effect, 'elastic' geometric transformations mediate between different expressions of one and the same underlying abstract branching structure.

The organic form of arborescences is an extension of the interest in 'natural' forms that Xenakis had already shown in *Terretektorh* (1966), *Nomos gamma* (1967–8) and *Synaphai* (1969). He invented the computer system UPIC (Unité Polyagogique Informatique du CEMAMu) to automate the design of these natural forms and extend them to the area of sound synthesis ('microcomposition'). His search for a universal theory of form is documented in the article 'L'univers est une spirale'.

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### **12. Globally tempered sieves and cellular automata.**

In the 1980s and 90s sieve structures became the 'solution to half the problems in composition' ('A propos de *Jonchaies*', 1988). Xenakis inclined towards writing extended 'sound-veils' (*Robindore*, 1996), by taking sieved melodic lines, and compressing and stretching them, superimposing them in an asynchronous way, or generating a kind of 'sound-halo' around them ('A

propos de *Jonchaies*'). An alternative to layering is a global definition of sieves with respect to time, aided by 'cellular automata' (e.g. in *Horos*) which expand the development of sound in time by means of deterministic chaos (Hoffmann, 1994). Xenakis associates the flow of time with a general conception of current and turbulence (for instance, *Roái* means 'floods'). While his works for ensemble (e.g. *Thallein* and *Jalons*) display a mobile manner in realizing the most varied sonic ideas – from trills and extended oscillations to funeral march-like sections – the compositions for large orchestra since *Ata* (1987) tend towards gigantic 'amalgamated' clusters in an increasingly monolithic style. Their mixing of inharmonic, dense spectra to generate a complex amalgam of sound colours is much like his approach to electro-acoustic sound synthesis. Even the string quartets of this period (*Tetora*, 1990; *Ergma*, 1994) exhibit such a tendency.

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### 13. Electro-acoustic works.

Although Xenakis has produced substantially less electro-acoustic music than music for instruments he has researched intensively in the area since the start of his career. Taken as a whole his tape output suggests a time-loop-like evolution of a single mighty sound stream, endlessly differentiated internally. In particular he has explored the dense spectra of noise-like sounds, rich in partials, which appear similar to sounds emanating from acoustic mass phenomena. Stochastic distributions determined the montage of early electro-acoustic pieces, the density of the acoustic events controlled by means of multiple mixing of *concrète* sound-sources (Di Scipio, 1995; Delalande, 1997). Such sources have included instrumental sounds, often with extended playing techniques (e.g. exaggerated bow-pressure, playing right up against the bridge, the use of additional *col legno* noise, wind multiphonics) as in *Persépolis* (written for the 1971 *Polytope*) and *Hibiki Hana Ma* (for the 1970 Osaka World Fair). *La légende d'Eer* (1977), the singular 46-minute sound-universe for the *Diatope*, technically the most advanced of the *Polytopes*, is, like *Persépolis*, a maelstrom of gradually swelling sound which has a palpable physical effect on the listener. Up to eight independent tracks allow the mixing of diverse channels during a performance.

Another way Xenakis has generated complex sounds from rich, transitory spectra is with the combination of many short pulses or 'sound grains'; such 'granular synthesis' was realized with analogue equipment in *Analogique B* (1958–9). He also attempted its implementation on the computer (Leprince-Ringuet in Gerhards, 1981, p.53) but the technique was developed further by others.

The multi-track superimposition of already complex sounds is also the basic idea of graphic synthesis with the UPIC system. As a first step wave forms are either designed freely by hand or sampled from complex sound-sources. As a second step, dozens of pitch curves are defined, in order to turn these waves into simultaneous sound, by means of a battery of oscillators. Most recently, by means of Xenakis's own computer programme GENDYN (1991) and his Dynamic Stochastic Synthesis algorithm, up to 16 time-variant sound tracks may be synthesized in parallel. The algorithm covers the entire range between constant and chaotically fluctuating spectra, i.e. between the 'frozen' musical note and complex noise. It thus represents a refinement of the

explorations of stochastic synthesis with the computer which Xenakis began 20 years ago.

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## WORKS

### orchestral

Anastenaria: le sacrifice, orch (51 insts), 1953, sketch

Metastaseis, 1953–4; SWF SO, cond. H. Rosbaud, Donaueschingen, 16 Oct 1955

Pithoprakta, 1955–6; Bavarian RSO, cond. H. Scherchen, Munich, 8 March 1957

Achorripsis, 21 insts, 1956–7; Colón cond. Scherchen, Buenos Aires, 20 July 1958

Duel, 2 small orchs, 1959; Radio Hilversum PO, cond. D. Masson and F. Terby, Hilversum, 18 Oct 1971

Syrmos, 12 vn, 3 vc, 3 db, 1959; Ensemble Instrumental de Musique

Contemporaine, cond. Simonović, Paris, 20 May 1969

Stratégie, 2 small orchs, 1959–62; Venice Festival Orchestra, cond. B. Maderna and C. Simonović, 25 April 1963

ST/48, 48 insts, 1959–62; Orchestre Philharmonique de l'ORTF, cond. L. Foss, Paris, 21 Oct 1968

Akrata, 16 wind, 1964–5; cond. Simonović, Paris, 1965

Terretektorh, 1966; Orchestre Philharmonique de l'ORTF, cond. Scherchen, Royan, 3 April 1966

Polytope, 4 orch groups, 1967; Ensemble Instrumental de Musique Contemporaine, cond. Simonović, Montreal, Expo 67, 1967

Nomos gamma, 1967–8; Orchestre Philharmonique de l'ORTF, cond. C. Bruck, Royan, 4 April 1969

Kraanerg (ballet), orch, tape, 1968; Ottawa, June 1969

Synaphai, pf, orch, 1969; Pludermacher, cond. M. Tabachnik, Royan, 6 April 1971

Antikhthon (ballet), 1971; cond. Tabachnik, Bonn, Festival Xenakis, 21 Sept 1974

Eridanos, 8 brass, str orch, 1973; Ensemble Européen de Musique Contemporaine cond. Tabachnik, La Rochelle, 13 April 1973

Erikhthon, pf, orch, 1974; C. Helffer, Orchestre de l'ORTF, cond. Tabachnik, Paris, 21 May 1974

Noomena, 1974; Orchestre de Paris, cond. G. Solti, Paris, 16 Oct 1974

Empreintes, 1975; Netherlands Radio PO, cond. Tabachnik, La Rochelle, 29 June 1975

Jonchaies, 1977; Orchestre National de France, cond. Tabachnik, Paris, 21 Dec 1977

Ais, amp Bar, perc, orch, 1980; S. Sakkas, Gualda, Bavarian RSO, cond. Tabachnik, Munich, 13 Feb 1981

Pour les baleines, str, 1982; Orchestre Colonne, cond. D. Masson, Orléans, 2 Dec 1983

Lichens, 1983; Liège PO, cond. Bartholomé, Liège 16 April 1984

Shaar, str, 1983; Jerusalem Sinfonietta, cond. J.- P. Izquierdo, Tel Aviv, 3 Feb 1983

Alax, 3 ens of 10 insts (fl, cl, 2 hn, trbn, hp, perc, vn, 2 vc), 1985; Ensemble Modern, Ensemble Köln, Gruppe Neue Musik Hanns Eisler, cond. E. Bour, Cologne, 15 Sept 1985

Horos, 1986; Japan PO, cond. H. Iwaki, Tokyo, 24 Oct 1986

Keqrops, pf, orch, 1986; R. Woodward, New York PO, cond. Z. Mehta, New York, 13 Nov 1986

Ata, 1987; SWF SO, cond. M. Gielen, Baden-Baden, 3 May 1988

Tracées, 1987; Orchestre National de Lille, cond. J.-C. Casadeus, Paris, 17 Sept

1987

Kyania, 1990; Montpellier PO, cond. Z. Peskó, Montpellier, 7 Dec 1990

Tuorakemsu, 1990; Shinsei Nippon Orchestra, cond. H. Iwaki, Tokyo, 9 Oct 1990

Dox-Orkh, vn, orch, 1991; Arditti, BBC SO, London, cond. A. Tamayo, Strasbourg, 6 Oct 1991

Krinòidi, 1991; Orchestra Sinfonica dell'Emilia-Romagna 'Arturo Toscanini', cond. R. Encinar, Parma, May 1991

Roái, 1991; Berlin RSO, cond. O. Henzold, Berlin, 24 March 1992

Troorkh, trbn, orch, 1991; C. Lindberg, Swedish RSO, cond. E.-P. Salonen, Stockholm, 26 March 1993

Mosaïques, 1993; Orchestre des Jeunes de la Méditerranée, cond. Tabachnik, Marseilles, 23 July 1993

Dämmerschein, 1993–4; Cologne RSO, cond. Peskó, Lisbon, 9 June 1994

Koïranoï 1994; NDR SO, cond. Peskó, Hamburg, 1 March 1996

Iookos, 1995; SWF SO, cond. K. Ryan, Donaueschingen, 20 Oct 1996

Voile, str, 1995; Munich Chamber Orchestra, cond. C. Poppen, Munich, 16 Nov 1995

Sea-Change, 1997; BBC SO, cond. A. Davis, London, 23 July 1997

O-Mega, perc solo, chbr orch, 1997; E. Glennie, London Sinfonietta, cond. M. Stenz, Huddersfield, 30 Nov 1997

### choral

Zyia (folk), S, male vv (10 minimum), fl, pf, 1952; cond. R. Safir, Evreux, 5 April 1994

Anastenaria: procession aux eaux claires, SATB (30vv), male choir (15vv), orch (62 insts), 1953, sketch

Polla ta dhina (Sophocles: *Antigone*), children's vv, wind, perc, 1962; cond. Scherchen, Stuttgart, 25 Oct 1962

Hiketides: les suppliates d'Eschyle, 50 female vv, 10 insts/orch, 1964; cond. Simonović, Paris, 1968

Oresteïa (incid music/concert work, Aeschylus), chorus, 12 insts, 1965–6; cond. Simonović, Ypsilanti, MI, 14 June 1966

Medea (incid music, Seneca), male vv, orch, 1967; cond. Masson, Paris, 29 March 1967

Nuits, 3 S, 3 A, 3 T, 3 B, 1967–8; cond. M. Couraud, Royan, 7 April 1968

Cendrées, chorus, orch, 1973–4; cond. Tabachnik, Lisbon, 20 June 1974

A Colone (Sophocles), male/female vv (20 minimum), 5 hn, 3 trbn, 6 vc, 4 db, 1977; Metz, 19 Nov 1977

A Hélène, Mez, female vv, 2 cl, 1977; Epidavros, July 1977

Anemoessa (phonemic text), SATB (42 minimum), orch, 1979; cond. R. Dufallo, Amsterdam, 21 June 1979

Nekuïa (phonemes and text from J.-P. Richter: *Siebenkäs* and Xenakis: *Ecoute*), SATB (54 minimum), orch, 1981; cond. Tabachnik, Cologne, 26 March 1982

Pour la Paix (Xenakis), SATB, 2 female spkrs, 2 male spkrs, tape (UPIC), 1981, version for SATB (32 minimum); cond. M. Tranchant, Paris, 23 April 1982

Serment-Orkos (Hippocrates), SATB (32 minimum), 1981; Greek Radio Choir, Athens, 1981

Chant des Soleils (Xenakis, after P. du Mans), SATB, children's choir, 18 brass 6 (hn, 6 tpt, 6 trbn) or multiple, perc, 1983; Nord-Pas-de-Calais [simultaneous performance in several towns of the region], 21 June 1983

Idmen A/Idmen B (phonemes from Hesiod: *Theogony*), SATB (64 minimum), 4/6 perc, 1985; Antifona de Cluj, Les Percussions de Strasbourg, Strasbourg, 24 July 1985

Knephas (phonemes by Xenakis), SATB (32 minimum), 1990; cond. J. Wood, London, 24 June 1990

Pu wijnuej we fyp (A. Rimbaud), children's choir, 1992; cond. D. Dupays, Paris, 5 Dec 1992

Bakxai Evrupidou [The Bacchae] (Euripides), Bar, female vv (also playing maracas), pic, ob, dbn, hn, tpt, trbn, 3 perc, 1993; J. Dixon, cond. N. Kok, London, 1 Sept 1993

Sea-Nymphs (phonemes from W. Shakespeare: *The Tempest*), SATB (24 minimum), 1994; cond. S. Joly, London, 16 Sept 1994

#### other vocal

Tripli zyia, 1v, pf, 1952, unpubd

Trois poèmes (F. Villon: *Aiés pitié de moy*, V. Mayakovsky: *Ce soir je donne mon concert d'adieux*, Ritsos: *Earini Symphonia* [Spring Symphony]), 1v, pf, 1952, unpubd

La colombe de la paix, A, 4vv (SATB), 1953, unpubd

Stamatis Katotakis (table song), 1v, male vv, 1953, unpubd

N'shima, 2 Mez/A, 2 hn, 2 trbn, vc, 1975; cond. J.-P. Izquierdo, Jerusalem, Feb 1976

Pour Maurice, Bar, pf, 1982; S. Sakkas, C. Helffer, Brussels, 18 Oct 1982

Kassandra (Aeschylus), Bar + 20str psalterion, perc, 1987; Sakkas, Gualda, Gibellina, 21 Aug 1987 [second part of Oresteïa: see choral]

La déesse Athéna (Aeschylus), Bar, pic, ob, E♭cl, db cl, dbn, hn, pic tpt, trbn, tuba, perc, vc, 1992; Sakkas, cond. Tabachnik, Athens, 3 May 1992 [scene from Oresteïa: see choral]

#### chamber

Dipli Zyia, vn, vc, 1951, unpubd

ST/4, str qt, 1956–62; Bernède Quartet, Paris, 1962

ST/10, cl, b cl, 2 hn, hp, perc, str qt, 1956–62 cond. Simonović, Paris, May 1962

Morsima-Amorsima, pf, vn, vc, db, 1956–62; cond. Foss, Athens, 16 Dec 1962

Analogique A, 9 str, 1958 [must be performed with tape work Analogique B]; cond. Scherchen, Gravesano, summer 1959

Amorsima-Morsima, cl, b cl, 2 hn, hp, perc, str qt; cond. Foss, Athens, 1962

Atrées, fl, cl, b cl, hn, tpt, trbn, 2 perc, vn, vc, 1962; cond. Simonović, Paris, 1962

Eonta, 2 tpt, 3 trbn, pf, 1963–4; cond. P. Boulez, Paris, 16 Dec 1964

Anaktoria, cl, bn, hn, str qt, db, 1969; Octuor de Paris, Avignon, 3 July 1969

Persephassa, 6 perc, 1969; Les Percussions de Strasbourg, Persepolis, 9 Sept 1969

Aroura, 12 str, 1971; cond. Tabachnik, Lucerne, 24 Aug 1971

Charisma, cl, vc, 1971; Royan, 6 April 1971

Linaia-Agon, hn, trbn, tuba, 1972; cond. Tabachnik, London, 26 April 1972

Phlegra, 11 insts, 1975; cond. Tabachnik, London, 28 Jan 1976

Epeï, eng hn, cl, tpt, 2 trbn, db, 1976; cond. S. Garant, Montréal, 9 Dec 1976

Retours-Windungen, 12 vc, 1976; Berlin PO, Bonn, 20 Feb 1976

Dmaathen, ob, perc, 1976; N. Post, J. Williams, New York, May 1977

Akanthos, 9 insts, 1977; Ensemble Studio 111, Strasburg, 17 June 1977

Ikhour, str trio, 1978; Trio à Cordes Français, Paris, 2 April 1978

Dikhthas, vn, pf, 1979; S. Accardo, B. Canino, Bonn, 4 June 1980

Palimpsest, eng hn, b cl, bn, hn, perc, pf, str qnt, 1979; cond. S. Gorli, Aquila, 3 March 1979

Pléïades, 6 perc, 1979; Les Percussions de Strasbourg, Strasbourg, 17 May 1979

Komboï, amp hpd, perc, 1981; Chojnacka, Gualda, Metz, 22 Nov 1981

Khal Perr, brass qnt, 2 perc, 1983; Quintette Arban, Alsace Percussions, Beaune, 15 July 1983

Tetras, str qt, 1983; Arditti String Quartet, Lisbon, 8 June 1983

Thallein, pic, ob, cl, bn, hn, pic tpt, trbn, perc, pf, str qnt, 1984; cond. E. Howarth, London, 14 Feb 1984

Nyûyô [Setting Sun], shakuhachi, sangen, 2 koto; 1985; Angers, Ensemble Yonin-No Kai (Tokyo), 30 June 1985

Akea, pf, str qt, 1986; Helffer, Arditti String Quartet, Paris, 15 Dec 1986

A l'île de Gorée, amp hpd, pic, ob, cl, bn, hn, tpt, str qnt, 1986; cond. Kerstens, Amsterdam, 4 July 1986

Jalons, pic, ob, b cl, db cl, dbn, hn, tpt, trbn, tuba, hp, str qnt, 1986; cond. Boulez, Paris, 26 Jan 1987

XAS, sax qt, 1987; Raschèr Quartet, Lille, 17 Nov 1987

Waarg, pic, ob, cl, bn, hn, tpt, trbn, tuba, str qnt, 1988; cond. Howarth, London, 6 May 1988

Echange, solo b cl, fl, ob, cl, bn, hn, tpt, trbn, tuba, str qnt, 1989; H. Sparnaay, cond. Porcelijn, Amsterdam, 26 April 1989

Epcycle, solo vc, fl, ob, cl, hn, tpt, trbn, tuba, 2 vn, va, db, 1989; R. de Saram, Spectrum Ensemble, cond. G. Protheroe, London, 18 May 1989

Okho, 3 djembés, tall African drum, 1989; Trio Le Cercle, Paris, 20 Oct 1989

Ophaa, hpd, perc, 1989; Chojnacka, Gualda, Warsaw, 17 Sep 1989

Tetora, str qt, 1990; Arditti String Quartet, Witten, 27 Apr 1991

Paille in the wind, vc, pf, 1992; J. Scalfi, Woodward, Milan, 14 Dec 1992

Plektó, fl, cl, perc, pf, vn, vc, 1993; cond. R. Platz, Witten, 24 April 1994

Ergma, str qt, 1994; Mondrian String Quartet, The Hague, 17 Dec 1994

Mnamas Xapin Witoldowi Lutoslavskiemu [In Memory of Witold Lutosławski], 2 hn, 2 tpt, 1994; cond. W. Michniewki, Warsaw, 21 Sept 1994

Kaï, fl, cl, bn, tpt, trbn, vn, va, vc, db, 1995; cond. D. Coleman, Oldenburg, 12 Nov 1995

Kuïlenn, fl, 2 ob, 2 cl, 2 bn, 2 hn, 1995; Netherlands Wind Ensemble, Amsterdam, 10 June 1996

Hunem-Iduhey, vn, vc, 1996; E. Michell, O. Akahoshi, New York, 9 Aug 1996

Ittidra, str sextet, 1996; Arditti String Quartet, T. Kakuska (va), V. Erben (vc), Frankfurt, 4 Oct 1996

Roscobeck, vc, db, 1996; R. de Saram, S. Scordanibbio, Cologne, 6 Dec 1996

Zythos, trbn, 6 perc, 1996; Lindberg, Kroumata Ensemble, Birmingham, 10 April 1997

### **solo instrumental**

Seven piano pieces without title, Menuet, Air populaire, Allegro molto, Mélodie, Andante, pf, 1949–50, unpubd

Suite, pf, 1950–51, unpubd

Thème et conséquences, pf, 1951, unpubd

Herma, pf, 1960–61

Nomos alpha, vc, 1965–6; S. Palm, Bremen, 5 May 1966

Mikka, vn, 1971; I. Gitlis, Paris, 27 Oct 1972

Evryali, pf, 1973; C. Helffer, Paris, 1974

Gmeeoorh, org, 1974; C. Holloway, U. of Hartford, CT, 1974

Psappa, perc, 1975; S. Gualda London, 2 May 1976

Theraps, db, 1975–6; F. Grillo, 26 March 1976

Khoai, hpd, 1976; E. Chojnacka, Cologne, 5 May 1976

Mikka 'S', vn, 1976; R. Pasquier, Orléans, 11 March 1976

Kottos, vc, 1977; M. Rostropovich, La Rochelle, 28 June 1977

Embellie, va, 1981; G. Renon-McLaughlin, Paris, 1981  
Mists, pf, 1981; Woodward, Edinburgh, 1981  
Naama, amp hpd, 1984; Chojnacka, Luxembourg, 20 May 1984  
Keren, trbn, 1986; B. Sluchin, Strasbourg, 19 Sept 1986  
A r. (Hommage à Ravel), pf, 1987; H. Austbö, Montpellier, 2 Aug 1987  
Rebonds, perc, 1988; Gualda, Rome, 1 July 1988

### tape

some works exist in one or more revised realizations

Diamorphoses, 2-track, 1957–8; Brussels, 5 Oct 1958  
Concret PH, 2-track, 1958; Brussels, Philips pavilion, 1958  
Analogique B, 2-track, 1958–9 [must be performed with chbr work Analogique A];  
cond. Scherchen, Gravesano, summer 1959  
Orient-Occident, 2-track, 1960; Cannes, May 1960  
The Thessaloniki World Fair (film score), 1-track, 1961  
Bohor, 4-track, 1962; Paris, 15 Dec 1962  
Hibiki Hana Ma, 12-track, 1969–70; Osaka, Expo 70, 1970  
Persépolis, 8-track, 1971; Persepolis, 26 Aug 1971  
Polytope de Cluny, 8-track, lighting, 1972; Paris, 17 Oct 1972  
Polytope II, tape, lighting, 1974; Paris, 1974  
La légende d'Eer (Diatope), 4- or 8-track, 1977; Paris, 11 Feb 1978  
Mycenae alpha, 2-track, UPIC, 1978; Mycenae, 2 Aug 1978  
Taurhiphanie, 2-track, UPIC, 1987; Arles, 13 July 1988  
Voyage absolu des Unari vers Andromède, 2-track, UPIC; Osaka, 1 April 1989  
GENDY3, 2-track, Dynamic Stochastic Synthesis, 1991; Metz, 17 Nov 1991  
S 709, 2-track Dynamic Stochastic Synthesis, 1994; Paris, 2 Dec 1994

Principal publishers: Boosey & Hawkes, Bote & Bock, Modern Wewerka, Salabert

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#### WRITINGS

Untitled analysis of *Metastaseis*, in C.E. Le Corbusier: *Modulor 2* (Boulogne, 1955, 2/1983; Eng. trans., 1958), 341–4  
'I simerines tasis tis gallikis moussikis' [Current tendencies in French music], *Epitheorissi technis* [Athens], no.6 (1955), 466–70  
'Provlimata ellinikis moussikis' [Problems of Greek music], *Epitheorissi technis* [Athens], no.9 (1955), 185–9; Ger. trans. in A. Baltensperger: *Iannis Xenakis und die Stochastische Musik: Komposition im Spannungsfeld von Architektur und Mathematik* (Zürich, 1997)  
'Der "Modulor"', *Gravesaner Blätter*, no.9 (1957), 2–5 [incl. Eng. trans.]  
'Architecture', in C.E. Le Corbusier: *Le poème électronique* (Paris, 1958), 9; Eng. trans. as 'Le Corbusier's *Electronic Poem*' in *Gravesaner Blätter*, no.9 (1957), 51–4  
with L.C. Kalff: 'The Philips Pavilion and The Electronic Poem', *Arts and Architecture*, no.11 (1958), 23  
'Les Métastassis', unpubd typescript, before 1959, *D-DSim*  
'La musique stochastique: éléments sur les procédés probabilistes de composition musicale', *Revue d'esthétique*, no.14 (1961); Eng. trans. in

- Gravesaner Blätter*, no.18 (1960), 84–105; no.19 (1960), 140–50; no.21 (1961), 113–21; no.22 (1961), 144–5
- ‘Stochastic Music’, *Music East and West: Tokyo 1961*, 134–40
- ‘Un cas: la musique stochastique’, *Musica-disques*, no.102 (1962), 11
- ‘Debussy a sformalizowanie muzyki’, *Ruch muzyczny*, vi/16 (1962), 7
- ‘Wer ist Iannis Xenakis/Who is Iannis Xenakis’, *Gravesaner Blätter*, nos.23–4 (1962), 185–6
- ‘Musiques formelles’, *ReM*, nos. 253–4 (1963); repr. as *Musiques formelles* (Paris, 1981); Eng. trans. as *Formalized Music: Thought and Mathematics in Composition* (Bloomington, IN, 1971, enlarged 2/1992)
- ‘Schaeffer, Pierre’, *MGG1*
- ‘Intuition or Rationalism in the Techniques of Contemporary Musical Composition’, *Berlin Confrontation: Künstler in Berlin* (Berlin, 1965), 15–18
- ‘Tribune libre’, *Gravesaner Blätter*, no.26 (1965), 5
- ‘Motsägelsen musik och maskin’, *Nutida musik*, ix/5–6 (1965–6), 23
- ‘Notice sur Orestie’, *Sigma*, no.3 (1966), 6; rev. as ‘Arcaiotha kai sugcronh mousikh’ [Antiquity and contemporary music], *Deltio kritikis diskografias*, nos.18–19 (1976), 377–82
- ‘Structures hors-temps’, *The Musics of Asia: Manila 1966*, 152–73 [summary in *EthM*, xi (1967), 107–13]
- ‘Ad libitum ...’, *World of Music*, ix/1 (1967), 17–19
- ‘La musique et les ordinateurs’, *Quinzaine littéraire* (March 1968), 23–6
- ‘Xenakis, Iannis’, *MGG1*
- ‘Une note’, *ReM*, nos. 265–6 (1969), 51
- ‘Structures universelles de la pensée musicale’, *Liberté et organisation dans le monde actuel* (Paris, 1969), 173–80
- ‘Musique et programmation’, *ITC (Ingénieurs, Techniciens et Cadres) actualités*, no.2 (1970), 55–7
- ‘Short Answers to Difficult Questions’, *Composer* [USA], ii/2 (1970), 39
- Untitled essay, *PNM*, ix/2 (1970–71), 130
- ‘Les dossiers de l’E.m.a.mu’, *Colloquio artes*, xiii/5 (1971), 40–48
- ‘Free Stochastic Music from the Computer’, *Cybernetics, Arts, and Ideas*, ed. J. Reichardt (London, 1971)
- Musique, Architecture* (Tournai, 1971, enlarged 2/1976; Eng. trans., forthcoming)
- Preface to M. Gagnard:** *L’initiation musicale des jeunes* (Paris, 1971), 9–11
- ‘Den kosmika världsstaden’, *Nutida musik*, xv/3 (1971–2), 13–14
- ‘Om “Terrektorh”’, *Nutida musik*, xv/2 (1971–2), 47
- Untitled essay, *Ferienkurse ’74: Darmstadt 1974*, ed. E. Thomas, 16–18
- ‘Propos impromptu’, *Courrier musical de France*, no.48 (1974), 130–33
- ‘Iannis Xenakis: aftoviografiko’ [Xenakis: an autobiography], *Deltio kritikis diskografias*, nos.18–19 (1976), 374–6
- Opening Address, *Computer Music Conference V: Evanston, IL, 1978*
- ‘Centre Georges Pompidou: geste de lumière et de son’, *Le Diatope-Xenakis* (Paris, 1978), ‘Epistimoniki skepsi kai moussiki’ [Scientific thought and music], *Rotonta*, no.4 (1978), 380–95
- Untitled essay, in I. and G. Bogdanoff:** *L’effet science-fiction* (Paris, 1979), 283–6
- Arts/Sciences: alliages* (Paris, 1979; Eng. trans., 1985, as *Arts – Sciences, Alloys: the Thesis Defense of Iannis Xenakis*)



- 'Brief an Karl Amadeus Hartmann', *Karl Amadeus Hartmann und die Musica Viva*, Bayerische Staatsbibliothek, 19 June – 29 Aug 1980, ed. R. Wagner, M. Attenkofer and H. Hell (Munich, 1980), 337 [exhibition catalogue]
- 'Migrazioni nella composizione musicale', *Musica e elaboratore*, ed. A. Vidolin (Venice, 1980)
- 'Dialexh' [Conference], *Symbossio: synchroni tecni kai paradossi* (Athens, 1981), 195–206
- 'Homage to Béla Bartók', *Tempo*, no.136 (1981), 5
- 'Il faut que ça change', *Le matin* (26 Jan 1981)
- 'Le temps en musique', *Spirales*, no.10 (1981), 9–11
- 'La composition musicale est à la fois dépendante et indépendante de l'évolution technologique des systèmes analogiques ou numériques', *Conférences des journées d'études: Festival International du Son* (Paris, 1982), 137–55
- 'Il pensiero musicale', *Spirali*, no.41 (1982), 44–5
- 'Polytopes', in J.-P. Leonardini, M. Collin and J. Markovits: *Festival d'automne à Paris 1972–1982* (Paris, 1982), 218
- 'Science et technologie, instruments de création', *Recherche et technologie: Paris 1982* (Paris, 1982)
- 'Perspectives de la musique contemporaine', *Echos*, no.1 (1983), 47
- 'Un exemple enviable', *ReM*, nos.372–4 (1984), 67
- 'Notice sur la vie et les travaux de Georges Auric', *Discours prononcés dans la séance publique tenue par l'Académie des Beaux-Arts*, no.6 (1984), 13–19
- 'Un plaidoyer pour l'avant-garde?', *Nouvel observateur*, nos. 19–25 (1984), 97
- 'La source de l'expérience humaine', *Le monde* (13 Sept 1984)
- 'Les conditions actuelles de la composition', *France Forum*, nos.223–4 (1985), 10–12
- 'Le monde en harmonie', *Silences*, no.1 (1985), 91–4
- 'Briefauszug an Hermann Scherchen', *Hermann Scherchen Musiker*, ed. H. Pauli and D. Wunsche (Berlin, 1986), 95
- 'Hermann Scherchen', *Monde de la musique*, no.89 (1986), 91
- 'Ouvrir les fenêtres sur l'inédit', *20ème siècle: images de la musique française*, ed. J.-P. Derrien (Paris, 1986), 160–62
- 'Mykenae alpha', *PNM*, xxv/1–2 (1987), 12–15
- 'Xenakis on Xenakis', *PNM*, xxv/1–2 (1987), 16–63
- 'A propos de Jonchaies', *Entretiens*, no.6 (1988), 133–7
- Untitled essay, *Edgard Varèse 1883–1965: Dokumente zu Leben und Werk*, ed. H. de la Motte-Haber and K. Angermann (Frankfurt, 1990), 79–80
- 'Originality in Musical Composition', *Technology's Challenge for Mankind* (Tokyo, 1990), 17–24
- 'Sieves', *PNM*, xxviii/1 (1990), 58–78; partial repr. in *Kéleütha* (Paris, 1994), 75–87
- 'UPIC Sketch for *Voyage absolu des Unari vers Andromède*, 1989, *PNM*, xxviii/2 (1990), 119, 135
- 'More Thorough Stochastic Music', *Computer Music Conference: Montreal 1991*, 517–18
- Untitled essay, *PNM*, xxxi/2 (1993), 135 [on John Cage]
- Kéleütha* (Paris, 1994) [incl. 'La crise de la musique sérielle', 39–43; 'Lettre à Hermann Scherchen', 44–5; 'Théorie des probabilités et composition

musicale'; 'Eléments sur les procédés probabilistes (stochastiques) de composition musicale', 46–53; 'La voie de la recherche et de la question', 67–74; 'Culture et créativité', 129–32; 'Des universes du son', 112–20; 'Entre Charybde et Scylla', 88–93; 'Les chemins de la composition musicale', 15–38; 'Musique et originalité', 106–11; 'Pour l'innovation culturelle', 133–5; 'L'univers est une spirale', 136–8; 'Condition du musicien', 121–8; 'Cribles', 75–87; 'Sur le temps', 94–105]

*Musique et originalité* (Paris, 1996) [collection of essays]

'Determinacy and Indeterminacy', *Organised Sound*, i (1996), 143–55

## INTERVIEWS

**B.A. Varga:** *Beszélgetések Iannis Xenakisszal* (Budapest, 1982; Eng. trans., 1996, as *Conversations with Iannis Xenakis*)

**M. Feldman:** 'A Conversation on Music', *Res*, no.15 (1988), 177–81

**E. Restagno:** 'Un'autobiografia dell'autore raccontata de Enzo Restagno', *Xenakis* (Turin, 1988), 3–70

**M. Harley:** 'Musique, espace et spatialisation', *Circuits*, v/2 (1994), 9–20

**P. Szendy:** 'Ici et là: entretien avec Iannis Xenakis', *Cahiers de l'IRCAM*, no.5 (1994), 107–13

**F. Delalande:** *Il faut être constamment un immigré: entretiens avec Xenakis* (Paris, 1997)

[Xenakis, Iannis](#)

## BIBLIOGRAPHY

### whole issues of periodicals

*ReM*, no.257 (1963)

*Nutida musik*, x/5 (1966–7)

*L'arc*, no.51 (1972)

*Nutida musik*, xxviii/3 (1984–5)

*MusikTexte*, no.13 (1986)

*Iannis Xenakis*, *Musik-Konzepte*, nos.54–5 (1987)

*Entretemps*, no.6 (1988), esp. 57–143

*Circuit*, v/2 (1994)

*Muzyka*, no.3 (1998; forthcoming)

### general studies

**D. Charles:** *La pensée de Xenakis* (Paris, 1970)

**D. Halperin:** *L'oeuvre musicale de Iannis Xenakis* (Jerusalem, 1975) [in Hebrew]

**O. Revault d'Allonnes:** *Xenakis: Polytopes* (Paris, 1975)

**J. Ruohomki:** *Ylesiä pürteitä Iannis Xenakisen musiikillisesta ajattulesta metodeista ja teoksista* (Helsinki, 1977)

**M. Sato:** *Iannis Xenakis: sūgaku ni yori sakkyoku* [Musical composition by mathematics] (MA diss., Tokyo U. of Fine Arts and Music, 1978)

**H. Gerhards, ed.:** *Regards sur Iannis Xenakis* (Paris, 1981) [incl. homages by M. Kundera, O. Messiaen and S. Ozawa]

**N. Matossian:** *Iannis Xenakis* (Paris, 1981; Eng. trans., 1984)

**J. Vermeil:** 'Les demeures Xenakis', *Silences*, no.1 (1985), 201–06

**P.-A. Castanet:** 'L'organon, ou Les outils mathématiques de la création musicale', *Cahiers du CIREM*, nos.1–2 (1986), 33–44

**H. Lohner:** 'Xenakis and the UPIC', *Computer Music Journal*, x/4 (1986), 42–

- P.-E. Gontcharov:** *Les percussions chez Xenakis* (diss., U. of Paris IV-Sorbonne, 1988)
- E. Restagno, ed.:** *Xenakis* (Turin, 1988)
- S.A. Joseph:** *The Stochastic Music of Iannis Xenakis: an Examination of his Theory and Practice* (diss., New York U., n.d.)
- A. Orcalli:** *Le hasard se calcule: una tesi di Iannis Xenakis* (Padua, 1990)
- F.-B. Mache:** 'De *Nekuia* à *Dox Orkh*, dix années de création', *Musica*, Festival de Strasbourg (1991)
- P. Oswald:** 'Polytope von Iannis Xenakis', *Arch+*, no.107 (1991), 50–54
- A. Baltensperger:** "'Art" und "Science"', *NZM*, Jg.153, no.5 (1992), 27–34
- B. Gibson:** *Xenakis: organisation sonore, techniques d'écriture, orchestration* (Paris, 1992)
- N. Papoutsopoulos:** 'To Politopo ton Mykinon tou Ianni Xenaki' [The *Polytope de Mycènes* by Xenakis], *Sima* [Athens], no.7 (1992), 46–7
- G. Marino, M.-H. Serra and J.-M. Raczinski:** 'The UPIC System: Origins and Innovations', *PNM*, xxxi/1 (1993), 258–69
- M.-H. Serra:** 'Stochastic Composition and Stochastic Timbre: *GENDY3* by Iannis Xenakis', *PNM*, xxxi/1 (1993), 236–57
- M. Solomos:** *A propos des premières oeuvres (1953–69) de I. Xenakis: pour une approche historique de l'émergence de phénomène du son* (diss., U. of Paris IV, 1993)
- S. di Biasi:** *Musica e matematica negli anni 50–60: Iannis Xenakis* (Bologna, 1994)
- R. Eichert:** *Iannis Xenakis und die mathematische Grundlagenforschung* (Saarbrücken, 1994)
- M.A. Harley:** 'Spatial Sound Movement in the Instrumental Music of Iannis Xenakis', *Interface: Journal of New Music Research*, xxiii (1994), 291–314
- P. Hoffmann:** *Amalgam aus Kunst und Wissenschaft: naturwissenschaftliches Denken im Werk von Iannis Xenakis* (Frankfurt, 1994)
- H. de la Motte-Haber:** 'Musikalische Architektur und architektonische Musik', *Neue Berlinische Musikzeitung*, viii/1 (1994), suppl., 3–10
- M. Solomos:** 'Les trois sonorités xenakiennes', *Circuits*, v/2 (1994), 21–39
- A. Di Scipio:** 'Da *Concret PH* a *GENDY 301*: modelli compositivi nella musica elettroacustica di Xenakis', *Sonus*, xiv (1995), 61–92
- C. Schmidt:** *Komposition und Spiel: zu Iannis Xenakis* (Cologne, 1995)
- A. Baltensperger:** *Iannis Xenakis und die Stochastische Musik: Komposition im Spannungsfeld von Architektur und Mathematik* (Berne, 1996)
- R. Frisius:** 'Xenakis und das Schlagzeug', *NZM*, Jg.157, no.6 (1996), 14–18
- M. Iliescu:** *Musical et extramusical: éléments de pensée spatiale dans l'oeuvre de Iannis Xenakis* (diss., U. of Paris I, 1996)
- M. Solomos:** *Iannis Xenakis* (Mercuès, 1996)
- B. Robindore:** 'Eskhaté Ereuna: Extending the Limits of Musical Thought', *Computer Music Journal*, xx/4 (1996), 11–16
- R.J. Squibbs:** *Analytical Approach to the Music of Iannis Xenakis: Issues in the Recent Music* (Ann Arbor, 1996)
- P. Hoffmann:** 'L'espace abstrait dans la musique de Iannis Xenakis', *L'espace: musique – philosophie: Paris 1997*, 141–52
- M. Iliescu:** 'Connotations socio-politiques de la conception musicale de Xenakis', *L'espace: musique – philosophie: Paris 1997*, 265–77

- P. Hoffmann:** *Music out of Nothing? The Dynamic Stochastic Synthesis: a Rigorous Approach to Algorithmic Composition by Iannis Xenakis* (diss., Technische U., Berlin, forthcoming)
- M. Solomos:** *Du projet bartókien au son: l'évolution du jeune Xenakis* (forthcoming)
- M. Solomos, ed.:** *Proceedings of the 1st International Xenakis Congress*, Centre de Documentation de Musique Contemporaine, Paris, 1999 (forthcoming)

### particular works

- N. Kay:** 'Xenakis's "Pithoprakta"', *Tempo*, no.80 (1967), 21–5
- T. Souster:** 'Xenakis' "Nuits"', *Tempo*, no.85 (1968), 5–18
- K. Stone:** 'Xenakis: "Metastaseis, Pithoprakta, Eonta"', *MQ*, liv (1968), 387–95
- F. Vandebogaerde:** 'Analyse de "Nomos alpha"', *Mathématiques et sciences humaines*, no.24 (1968), 35–50
- D. Sevrette:** *Etude statistique sur 'Herma' de Xenakis* (Paris, 1973)
- T. DeLio:** 'I. Xenakis' "Nomos Alpha": the Dialectic of Structure and Materials', *JMT*, xxiv (1980), 63–86; repr. in *Contiguous Lines*, ed. T. DeLio (Lanham, MD, 1985), 3–30
- J. Vriend:** "'Nomos alpha": Analysis and Comments', *Interface: Journal of New Music Research*, x (1981), 15–82
- P. Gervasoni:** "'Idmem-Pléiades"', *Diapason-Harmonie*, no.384 (1983)
- T. DeLio:** *Structure and Strategy: Iannis Xenakis' 'Linaia-Agon'* (Maryland, 1985)
- J. Papadatos:** *Werkanalyse zu Iannis Xenakis' 'Jonchaies'* (Examensarbeit, Staatliche Hochschule für Musik, Düsseldorf, 1985)
- D.W. Yoken:** *Iannis Xenakis' 'Psappha': a Performance Analysis* (San Diego, 1985)
- P.-A. Castanet:** "'Mists", oeuvre pour piano de Iannis Xenakis: de l'écoute à l'analyse, les chemins convergents d'une rencontre', *Analyse musicale*, no.5 (1986), 65–75
- J.-R. Julien:** "'Nuits" de Iannis Xenakis: éléments d'une analyse', *Education musicale*, no.325 (1986), 5–9; no.326 (1986), 9–12
- O. Revault d'Allonnes:** "'Thallein" de Xenakis', *InHarmoniques*, no.1 (1986), 189–95
- T. DeLio:** 'Structure and Strategy: Iannis Xenakis' "Linaia Agon"', *Interface: Journal of New Music Research*, xvi (1987)
- J. Williams:** 'Iannis Xenakis: "Persephassa" an Introduction', *Percussive Notes* (1987), 9–13
- E.R. Flint:** *An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities in Iannis Xenakis' 'Psappha'* (diss., U. of Maryland, College Park, 1989)
- C. Prost:** 'Nuits: première transposition de la démarche de Iannis Xenakis du domaine instrumental au domaine vocal', *Analyse musicale*, no.15 (1989), 64–70
- M. Malt:** *Trois aspects de formalisation dans 'Achorripsis' de Iannis Xenakis* (Paris, 1991)
- F. Jodelet:** 'Psappha', *Percussions*, no.20 (1992), 9–15
- J.-M. Thil:** "'A Hélène" de I. Xenakis', *Education musicale*, no.391 (1992), 5–6
- J.M. Cubillas Morales:** *Iannis Xenakis, 'Nomos Alpha': una aproximación inicial hacia el análisis de un encuentro, en el siglo XX, entre la música y la matemática (Teoría de Grupos)* (Valparaíso, 1993)

- B. Larkin:** 'Analyse pour jouer "Psappha"', *Percussions*, no.29 (1993), 7–11  
**M. Solomos:** "'Persephassa" durée, geste et rythme', *Percussions*, no.33 (1994), 11–19  
**J.-M. Chauvel:** 'A propos de "L'île de Gorée" de Iannis Xenakis', *Terres des signes*, no.1 (1995), 169–73

## Xeres, Hurtado de.

See [Hurtado de Xeres](#).

## Xhosa music.

See [South africa](#), §I, 1.

## Xian Xinghai [Hsien Hsing-hai]

(*b* Macao, 13 June 1905; *d* Moscow, 30 Oct 1945). Chinese composer. Educated in music schools and conservatories in Canton (1918), Beijing (1926) and Shanghai (1928), he travelled to France in 1930 to study composition with d'Indy and Dukas and take violin lessons. After a period at the Paris Conservatoire he returned to Shanghai in 1935; he subsequently worked for the Pathé (Baidai) Record Company, headed the music section of the left-wing New China (Xinhua) Film Company, and composed many songs for use in anti-Japanese popular movements. With the outbreak of war with Japan in 1937, Xian moved to Wuhan then to the Communist headquarters at Yan'an, where he became head of music at Lu Xun College of the Arts (1938), composed several significant nationalistic compositions, such as the cantata *Huanghe* (1939), and encouraged the study of folk music so that it could be better adapted by reformist composers. In 1940 he moved to Moscow for further study, and remained in various parts of the Soviet Union and Mongolia until his death. As with his contemporary Nie Er, Xian's image was held up after his death by the Communist Party as that of a model revolutionary musician: his present reputation in Chinese musical circles stems more from politically motivated discussions of his life and personality than from the impact of specific compositions.

While he attempted to craft artworks which he hoped would raise musical standards within China, Xian's compositional style was essentially populist. His melodies commonly employ folk or folk-like material, and textures and structures, even in his larger-scale works, are typically simple and clearly articulated. His harmonic language reflects both the influence of his foreign studies and of his attempts to develop a style more closely according to Chinese thematic material.

### WORKS

(selective list)

Inst: Sym. no.1 'Minzu jiefang' [National Liberation], 1935, rev. 1941; Sym. no.2 'Shenshang zhi zhan' [Holy War], 1943; 3 Kazakh Dances, pf (1943); 4 sym. suites, 2 orchd

Vocal: Feng [Wind], S, cl, pf, c1933; Huanghe [Yellow River] (cant., Guang Weiran), 1939, rev. 1941, arr. pf conc. 1969; 3 other choral works; 2 ops; c250 mainly film

and mass songs and a few art songs surviving, incl. *Dao diren houfang qu* [Go to the Enemy's Rear] (Zhao Qihai), 1938

## BIBLIOGRAPHY

**R.C. Kraus:** *Pianos and Politics in China: Middle-Class Ambitions and the Struggle over Western Music* (New York, 1989), 40–69

**Wang Yuhe:** *Zhongguo jin- xiandai yinyuejia pingzhuan* [A critical biography of modern and contemporary Chinese music] (Beijing, 1992), 181–205

JONATHAN P.J. STOCK

## Xiao.

Vertical notched flute of the Han Chinese. The name *xiao* (which was the ancient name for panpipe) is onomatopoeic. The notched flute, historically known by names such as *di*, *guan* and *chiba*, was not called *xiao* until about the 12th century. It is one of the most venerated of Chinese instruments, possessing a pure and 'natural' tone quality (associated with bamboo) and embodying important associations with the Confucian ethos and cosmology. As known by the name *di*, the instrument was likened to the Confucian concept of *di*, a different character meaning 'to wash away evil from the mind'. A later variant known as *chiba* was twice the length of the 'yellow bell' pitch (*huangzhong*, the foundation pitch of the empire calculated on a tube of 0.9 feet), sounding a root pitch one octave lower and thus achieving correspondence with the universe.

The present-day *xiao* is constructed of bamboo, with an inward-sloping notch at the upper end (to assist tone production), five frontal finger-holes plus one dorsal thumb-hole, and two or more tassel holes near the lower end. External lengths vary by region, the crucial measurement being the location of the lower tassel holes (which define the vibrating length), for D flutes usually between about 50 and 52 cm below the blow-hole, depending upon internal diameter. Range is about two octaves commonly (d' – e''').

Several basic regional types are usually identified, all with variant constructions. Most common is the *zizhu* ('purple bamboo') *xiao*, characteristic of the Jiangnan area of central-eastern China. Longest of the regional variants (about 75 cm or more), this type is constructed from a species of bamboo with long, straight internodal sections, and it has a U-shaped notch carved through the uppermost node (which otherwise closes off most of the opening). Refined in tone and moderate in volume, this *xiao* is performed solo, in duet with *qin* or *zheng* zithers, or in small ensembles. The second major type is the *dongxiao*, employed in *nanguan* music of southern Fujian and Taiwan. Shorter than the Jiangnan *xiao* (about 57 cm), the *dongxiao* is constructed from 'stone bamboo' or other relatively thick species, and has a U- or V-shaped notch (the top node completely open), the lower end cut from the bamboo root. In theory, the instrument should have ten nodal outcroppings, though some variants have only nine. Other variants include the slender *yuping xiao*, and the *yaxiao* ('refined' *xiao*), a 1930s semi-chromatic eight-hole flute adapted for performance with the *qin* zither.

The history of the Chinese vertical notched flute is one of constantly changing terminology. Inscriptions on oracle bones from after the 14th century bce

reveal the names of two flutes, *yan* and *guan*. The *Zhouli* (c3rd–2nd centuries bce) and other classic texts mention the names *di* (a name later applied to transverse flutes) and *guan* ('pipe', a name later applied to reed-pipes). Both had finger-holes and presumably notches as well. The Zhou dynasty *di* must have been a four-holed flute, because during the Han dynasty (206 bce–ce 220) the poem *Changdi fu* ('Long *di* poem') reports that a fifth hole had been added (a thumb-hole at the back). Other writings of this period speak of another vertical flute, the six-holed *qiangdi*, an instrument of the Qiang tribal people of western China. This instrument was quite long and slender and may have been related to the unnotched vertical flute of Western Asia ([Ney](#)). But the Chinese vertical flute (*di*) was already documented in late Zhou literature as a standard instrument employed in ritual ensembles.

Because of its ritual use, the root pitch of the *di* was usually the same as the 'yellow bell' pitch (which changed from one dynasty to another). However, its roughly equidistant finger-hole positions obviously did not coincide with the accepted orthodoxy of circle-of-fifths temperament, because numerous attempts were made to correct this discrepancy.

During the Tang dynasty (618–907), the most significant type of vertical flute became known as *chiba guan*, or simply *chiba* (literally, '1·8 (Chinese) feet'). Preserved at the Shōsōin treasury in Japan are eight *chiba* (pronounced [Shakuhachi](#) in Japanese) dating from this period. They are of bamboo, jade, stone and ivory, between 34 and 44 cm in length, with outward-cut notches and five finger-holes plus one thumb-hole. After the Tang, the name *chiba* was found less frequently in the literature (perhaps because of changes in measurement systems), and by the 11th and 12th centuries the name *dongxiao* became more common. Among local musicians of southern Fujian province, both names are used.

That long, thin vertical flutes, known as *shudi* ('vertical' *di*) or *changdi* ('long' *di*) were also in use during the Tang is attested by representations in cave art and citations in period literature. According to the scholar Zhu Xi (1130–1200), the long flute was called *xiao* by his time (the term *di* increasingly being used to identify transverse flutes). A very few notched flutes constructed of porcelain, jade and bamboo survive from the 16th or 17th centuries. A larger number of 19th-century *xiao* are preserved in museums throughout China, North America and Europe, including handsome red-lacquered flutes decorated with gilded dragon motifs, taken from various Confucian shrines.

## BIBLIOGRAPHY

- A.C. Moule:** 'A List of the Musical and other Sound-Producing Instruments of the Chinese Journal of the Royal Asiatic Society, North China Branch', xxxix (1908), 1–160; repr. separately (Buren, 1989)
- Hayashi K. and others:** *Shōsōin no gakki* [Musical instruments in the Shōsōin] (Tokyo, 1967) [with Eng. summary]
- Cheung Sai-bung:** *Zhongguo yinyue shilun shugao* [Historical studies of Chinese music] (Hong Kong, 1974–5)
- Tong Kin-woon:** *Shang Musical Instruments* (diss., Wesleyan U., 1983); repr. in *AsM*, xv/1 (1983), 166–73
- Lu Songling:** 'Chiba chutan' [Preliminary study of the *chiba*], *Quanzhou lishi wenhua zhongxin gongzuo tongxun*, no.1 (1985), 9–18

**Liu Dongsheng and others, ed.:** *Zhongguo yueqi tuzhi* [Pictorial record of Chinese musical instruments] (Beijing, 1987)  
**Liu Dongsheng and Yuan Quanyou, eds.:** *Zhongguo yinyue shi tujian* [Pictorial guide to the history of Chinese music] (Beijing, 1988)  
**Liu Dongsheng, ed.:** *Zhongguo yueqi tujian* [Pictorial guide to Chinese musical instruments] (Ji'nan, 1992), 114–15, 119–21  
**Zheng Ruzhong:** 'Musical Instruments in the Wall Paintings of Dunhuang', *CHIME*, no.7 (1993), 4–56  
*Zhongguo yueqi zhi, qiming juan* (aerophone vol.) [forthcoming]  
*Zhongguo yinyue wenwu daxi* [forthcoming]

ALAN R. THRASHER

## Xiao, Shuxian [Hsiao, Shu-sien]

(*b* Tianjin, 9 April 1905; *d* Beijing, 26 Nov 1991). Chinese composer and educator. She was a prizewinning graduate of the Brussels Conservatoire Royale de Musique in 1932. From 1935 to 1954 she was married to the conductor Hermann Scherchen; the composer Tona Scherchen is their daughter. During the 1930s and 40s she spent 14 years in Switzerland, where she worked as a composer and was influential in promoting Chinese culture in Europe through her lectures and writings.

Her *Chinese Children's Suite* and the orchestral suite *Huainian Zuguo* were among the first works by a Chinese composer to become known in the West. Her style combines Chinese folk materials with Western techniques, a concept later developed in her teaching of polyphony. In 1950, motivated by a desire to contribute to her country's development, she returned to China with her three children. From that time until her death she taught composition at the Central Conservatory in Beijing, where she was regarded as inspirational to generations of Chinese composers. In addition to teaching, composing and writing, Xiao's lifelong involvement with polyphony included translations into Chinese of Lendvai's book on Bartók's form and harmony (Beijing, 1979) and Koechlin's *Précis des règles du contrepoint* (Beijing, 1986).

### WORKS

(selective list)

unless otherwise stated, all appear in following 2 collections and are undated

Collected Compositions (Central Conservatory of Music, Beijing, 1992) [A]

Collected Polyphonic Works (Beijing, 1992) [B]

Orch: *Huainian Zuguo* [A Commemoration of my Homeland], sym. suite, 1941 [A]

Chbr: *Fuge* [Fugue], str trio [B]; *Xintian You*, str qt, trad. [B]; *Huainian* [Commemoration], pic, eng hn, cl, bn [B]

Pf: *Shan Ge* [Mountain Song], Jiangxi trad. [A]; *Xu Qu* [Prelude], Yunnan trad. [A, B]; *Cai Cha Wu* [Tea Picking Dance], Yunnan trad. [A]; *Kanong Xiao Qu* [Little Canon], Hebei trad. [A]; *Guang Deng* [Walking among the Lanterns], Shandong trad. [A, B]; *Gangqin Xiaozoumingqu* [Sonatina] [A]; *Xu Qu* [A, B]; *Shan Ge* [B]; *Song Lang* [Seeing off a Sweetheart] [B]; *Xiao Chuang Yi Qu* [Little Invention] [B]; *Er sheng bu Fuge* [2-Part Fugue] [B]



Songs (1v, pf): Chinese Children's Suite, 1938 (Zürich, 1946); Yu Ye [Rainy Night] [A]; Manjiang Hong [All Red the River], trad., I, II [A]; Huaijiu [Remembering Old Times] [A]; Zizhu Diao [Purple Bamboo Melody] [A]; Yu bu Sa Hua Hua bu Hong [If the Rain doesn't Fall, the Flowers won't Bloom], Yunnan trad. [A]; Fengyang Huagu [Fengyang Flower Drum Dance], Anhui trad. [A]

Choral: Qingzhu Jinxing Qu [Celebration March], 1v, SATB, pf [A]; Gong Nong Bing Gechang Qiyi [Workers', Peasants' and Soldiers' Song], vv, pf [A]; Liubing [Skating], children's vv [B]

## BIBLIOGRAPHY

GroveW(J. Lindorff) [incl. further bibliography]

**S. Xiao:** 'La chanson populaire chinoise', *Sinologica: Zeitschrift für Chinesische Kultur und Wissenschaft*, i/1 (1947), 65–86

**Duan Pingtai:** 'Qi Xiao Shuxian xian sheng' [Introducing Professor Xiao], *Journal of the Central Conservatory of Music*, xi/2 (1983), 51–3

**Liu Fushu:** 'Dao nian Xiao Shuxian dai jie' [In memory of Xiao], *Art of Music*, no.49 (1992), 64–6

JOYCE LINDORFF

## Xiao Erhua [Hsiao Erh-Hua]

(b mainland China, 1906; d 1985). Chinese composer and teacher resident in Taiwan. In the late 1930s he studied music and theory in Japan; after working as a music teacher in Guangxi and Fujian, he moved to Taiwan in 1946.

There he helped to establish the music department at Taiwan Normal University, devoting his attentions more to musicology and teaching than to composition. In a period when concert performances were rare and only included music by foreign composers, Xiao introduced his students to the works of mainland Chinese composers such as Huang Zi, Chen Tianhe, Liu Xue'an, Lin Shengshi and Zhao Yuanren. This exposure encouraged his students, including such important Taiwanese composers as Hsu Tsang-houei and Ma Shuilong, to compose in the new Chinese art music style. Xiao himself wrote mainly vocal music in the prevailing 'pentatonic Romantic' style, combining Western tonal harmony with Chinese pentatonic melodies. Some of his songs, such as his famous *Fangong fuguo ge*, carry political messages concerned with resisting communism and retrieving the motherland.

C.C. Liu Collection, Institute of Chinese Studies, University of Heidelberg.

## BIBLIOGRAPHY

**Qiao Pei:** *Zhongguo xiandai yinyuejia* [Contemporary Chinese musicians] (Taipei, 1976), 120–22

**Hsu Tsang-houei:** 'Zhongguo xin yinyue shi: Taiwan bian 1945–85' [History of new music in China: Taiwan], *Zhongguo xin yinyue shi lunji*, ed. Liu Jingzhi (Hong Kong, 1990), 211–32, esp. 230

**You Sufeng:** *Taiwan jin sanshi nian 'xiandai yinyue' fazhan zhi tansuo 1945–1975* [Enquiries into the development of 'modern music' in Taiwan] (thesis, National Taiwan Normal U., 1990), esp. 1–29

**Hsu Tsang-houei:** 'The Republic of China', *New Music in the Orient*, ed. H. Ryker (Buren, 1991), 217–24, esp. 217

BARBARA MITTLER

## Ximénez [Jiménez], José

(*b* Zaragoza, bap. 25 Dec 1601; *d* Zaragoza, 9 Aug 1672). Spanish composer and organist. He was probably a pupil of Aguilera de Heredia before becoming his assistant organist at the cathedral of La Seo in Zaragoza in 1620. In 1627 or 1628 he succeeded him as organist. In 1654 Ximénez was offered the position of organist at the royal chapel in Madrid but he declined and remained at La Seo until his retirement in January 1672.

Ximénez's works, which are of moderate quality, include eight *tientos*, two *batallas*, one *folia* setting, one *gaytilla* and 11 sets of hymn and psalm versos, all for organ. Selections are published in F. Pedrell: *Antología de organistas clásicos españoles*, i (Barcelona, 1908) and in H. Anglés: *Antología de organistas españoles del siglo XVII*, i–ii (Barcelona, 1965–6).

### BIBLIOGRAPHY

*Apel*G

**W. Apel:** 'Spanish Organ Music of the Early 17th Century', *JAMS*, xv (1962), 174–81

**W. Apel:** 'Die spanische Orgelmusik vor Cabanilles', *AnM*, xvii (1962), 15–29

**L. Siemens Hernández:** 'La Seo de Zaragoza, destacada escuela de órgano en el siglo XVII, I', *AnM*, xxi (1966), 147–67

**M.E. Sutton:** *A Study of the Seventeenth-Century Iberian Organ Batalla: Historical Development, Musical Characteristics and Performance Considerations* (diss., U. of Kansas, 1975), 43–52

BARTON HUDSON

## Ximeno, Fabián Pérez

(*b* Mexico City, *c*1595; *d* Mexico City, 17 April 1654). Mexican composer and organist. From 1621 he held the position of second organist at Mexico City Cathedral, becoming first organist by November 1642. After the death of Luis Coronado, he was appointed *maestro de capilla* on 31 March 1648, and took as his assistant the nephew of his predecessor, Juan Coronado. He held this position, along with that of organist, until his death. During this period he trained his nephew, Francisco Vidales, who later became organist at Puebla Cathedral and a composer. Ximeno's successor was Francisco López Capillas. Influenced by Juan Gutiérrez de Padilla, Ximeno developed an interest in polychoral works. His numerous compositions include several masses, three *Magnificat* settings, two Lenten motets, a *Dixit Dominus*, two psalms for the Office of the Dead and a 5-part Christmas carol in the Galician dialect: *Ay, ay, galeguiños ay que lo veyo*.

MARK BRILL

## Xinda [Xindas, Xinta], Spyridon.

See [Xyndas, Spyridon](#).

## Xirimía [chirimía]

(Sp.).

See [Shawm](#).

## Xuares [Juárez], Alonso

(*b* Cuenca, c1639; *d* Cuenca, 26 June 1696). Spanish composer. He was *maestro de capilla* at Cuenca Cathedral from 3 September 1664 until 1675. Because of his excellent reputation he was offered the same post at Seville Cathedral, and served there from 29 April 1675 until 1 May 1684, when a kidney complaint caused his resignation. Returning to Cuenca, he was awarded various honours, including a benefice and a half-prebend, by the Bishop Alonso Antonio de San Martín. Xuares was renowned for his knowledge of scripture and classical learning; he carried on a weekly correspondence with Juan de Loaysa, librarian of the Biblioteca Colombina in Seville. His numerous extant compositions are notable for their liberal use of accidentals, rhythmic interest and contrasting textures.

### WORKS

6 masses, 8vv, insts; 5 Mag, 8–11vv, insts; 55 motets; psalms; 4 lamentations; other works; *E-CU*

**Missa sobre 'Sancte Ferdinandae Rex'**, 13vv; 17 motets, 7–8vv, bc; *Sc*  
Vulnerasti cor meum, 8vv, bc; Dum sacrum pignus, T, 4/4vv, bc; ed. in *Lira sacro-hispana*, 1st ser., *Siglo XVII*, i (Madrid, 1869) [no source indicated]

**Villancicos: En glorias de María**, 4vv, *D-Mbs*; **Venid venid zagales**, 5vv, bc, ed. in *Stevenson*

### BIBLIOGRAPHY

- T. Muñoz y Soliva**: *Noticias de todos los Ilmos: Señores Obispos que han regido la diócesis de Cuenca* (Cuenca, 1860), 319, 502
- S. de la Rosa y López**: *Los seises de la Catedral de Sevilla* (Seville, 1904), 154ff, 327
- H. Anglès**: 'La música conservada en la Biblioteca Colombina y en la Catedral de Sevilla', *AnM*, ii (1947), 3–39, esp. 37–8
- R. Navarro Gonzalo and J. López Cobos**: *Catálogo musical del archivo de la Santa Iglesia Catedral Basilica de Cuenca* (Cuenca, 1965, rev. 2/1973 by M. Angulo), 9
- J. López-Calo**: 'Corresponsales de Miguel de Irizar', *AnM*, xx (1965), 209–33
- R.M. Stevenson**: *Christmas Music from Baroque Mexico* (Berkeley, 1974), 41, 44, 75–6, 188–94
- M. Martínez Millán**: *Historia musical de la catedral de Cuenca* (Cuenca, 1988), 140–47, 196

ROBERT STEVENSON

## Xu Boyun [Hsu Po-Yun]

(b Tokyo, 12 June 1944). Taiwanese composer. Self-taught apart from a few private composition lessons with Hsu Tsang-houei, he was instrumental in the promotion of contemporary music in Taiwan the 1960s. A founding member of the Asian Composers' League, he staged a number of important Taiwanese avant-garde music festivals, such as *New Environment for Asian Music* in 1977, in cooperation with the composer Li Taixiang and the choreographer Lin Huaimin. In 1980 he founded *New Aspect*, the first weekly arts magazine in Taiwan, and initiated the first International Arts Festival. Out of these activities grew the *New Aspect Arts Centre and Gallery* (1983) and the *New Aspect Cultural and Educational Foundation* (1990), institutions responsible for much of the cultural activity of Taipei and Taiwan.

While Xu's compositions are indebted to China's traditional heritage, and especially that of Chinese opera, for instance in *Zhongguo xiqu de yanxiang* (1973) and the multimedia piece *Sheng/Si* (1974), they also bear testimony to his interest in the avant garde. He was one of the first Chinese composers to use synthetic sounds and the techniques of *musique concrète* in his compositions, notably in *Dai Mian* (1983) and *Sheng/Si*, and to apply avant-garde techniques to Chinese instruments, as in *Pipa suibi* (1975).

## WORKS

(selective list)

Stage: Guafu the Sun Chaser (ballet, Lin Huaimin), 1975; Mengtu [Dreamscape] (ballet, Lin Huaimin), 1985; Hui [Meeting], conceptual art, 1986; Loulan nü [Medea] (incid music), 1993

Orch: *Pipa Conc*, pipa, chbr orch, 1988; *Tianyuan [Origin]*, trad. Chin. inst ens, 1988

Chbr and solo inst: Yun [Pregnant], pic, fl, cl, vn, va, vc, pf, perc, 1969; Wuren, Wudi [5 Men and 5 Flutes], 5 fl, 1973; *Zhongguo xiqu de yanxiang* [Meditation on Chinese Theatre], str qnt, 1973; *Pipa suibi* [Pipa Jottings], pipa, 1975; *Si xiang* [4 Dimensions], fl, huqin, perc, 1976; Yun [Even], perc ens, 1976; You yuan, jing meng [Wandering in the Garden, Waking from a Dream], fl, vn, va, vc, huqin, guzheng, xun, perc, 1982; *Dai Mian* [Mask], synth, perc, sheng, guzheng, xun, 1983; Qian [Submersion], str qnt, 1996

Vocal: Yuange xing [Resentment] (Li Bai), S, pf, 1962; Han Shi [Cold Food] (Luo Yan), 1v, (pf, wind insts, perc)/pf, 1974; *Sheng/Si* [Life and Death] (Luo Yan), chorus, huqin, guzheng, xun, cl, ob, bn, str trio, db, perc, tape, 3 echo machines, 1974; *Jing* [Moon Field], vv, perc, 1977

MSS in C.C. Liu Collection, Institute of Chinese Studies, U. of Heidelberg

## BIBLIOGRAPHY

**Cheng Pao-chuan:** 'Hsu Po-Yun, the ROC's Impresario of the Arts', *Free China Review* (1985), no.4, pp.56–61

**B. Mittler:** 'Mirrors and Double Mirrors: The Politics of Identity in New Music from Hong Kong and Taiwan', *CHIME*, no.9 (1996), 4–44, esp. 28–9

**B. Mittler:** *Dangerous Tunes: the Politics of Chinese Music in Hong Kong, Taiwan and the People's Republic of China since 1949* (Wiesbaden, 1997), 206–7, 336–7

BARBARA MITTLER

# Xu Changhui.

See [Hsu Tsang-houei](#).

# Xu Lixian

(*b* Suzhou, Jiangsu province, 2 June 1928; *d* 6 March 1984). Chinese Suzhou *tanci* ballad singer. Xu Lixian became a professional musician at 11, performing first with the foster couple to whom her impoverished natural parents had sold her. Her repertory at this time included folksongs, various excerpts from *tanci* and local opera, and contemporary popular songs.

In 1953 Xu Lixian joined the Shanghai People's Pingtan Troupe (Shanghai Shi Renmin Pingtan Gongzuo tuan), encountering there many of the principal singers of the time. Her vocal style at this time combined the melodic character of Jiang Yuequan with the variation techniques of Xu Yunzhi. Xu Lixian was active both in the development of new repertory, such as a chronicle of the female revolutionary hero in *The New Ballad of Mulan* (*Xin Mulan ci*) (1959), and in the maintenance of the old. Among her innovations was the use of duet passages (*tanci* had formerly relied on solo singing, sometimes shared between two singers) in the ballad *After the Bumper Harvest* (*Fengshou zhi hou*) (1963).

During the Cultural Revolution (1966–76) Xu, like other Suzhou *tanci* musicians, was unable to perform. Resuming performance in 1978, her style after this enforced break was more experimental, setting aside traditional melodic and modal patterns in favour of a more individualistic compositional style. Over her whole career, Xu composed more than 60 large-scale ballads as well as many shorter works.

See also [China](#), §IV, 1(ii).

## BIBLIOGRAPHY

**Shanghai pingtan tuan, ed.:** *Xu Lixian changqiang xuan* [Selected songs of Xu Lixian] (Shanghai, 1979)

**Pan Huizhu:** *Innovation within Tradition: the Tanci (Chinese Suzhou Narrative Music) Style of Xu Lixian* (MA thesis, U. of Maryland, Baltimore, 1988)

*Zhongguo yinyue cidian, xubian* [Dictionary of Chinese music, supplementary vol.], YYS pubn (Beijing, 1992), 211

PENG BENLE

# Xun.

Globular [Flute](#) employed in Han Chinese Confucian rituals. The *xun* (pronounced 'hsün') is an egg-shaped flute of baked clay, with a blow-hole at its apex and usually between three and eight finger-holes distributed in various patterns. Sizes vary between about 8 and 13 cm in height. Because

of its globular wind chamber, the *xun* has a range of only about one octave, without usable overtones.

The ancient legacy of this ritual instrument in China is equalled only by the *qing* stone chime. Numerous small clay flutes, irregularly ball-shaped, egg-shaped and fish-shaped, have been found in Neolithic sites in and around Shanxi province, dating to c4000 bce and later. These ancient proto-*xun* flutes are between about 5 and 8 cm in height, each with one or two finger-holes. Instruments now identified as *xun*, found in late Shang sites (c1200 bce) of Henan province, are roughly the same size, though in shape of a large egg (standard thereafter), and generally with five finger-holes (three at the front, two at the rear). One important decorative characteristic found on some Shang instruments is the *taotie* design (face of a mythical animal, see illustration) on the outer surface.

The *xun* is mentioned frequently in Zhou literature. A note in the *Erya* (c3rd century bce) states that 'a large *xun* is like a goose egg, with a flattened bottom and six holes; a small one is like a chicken egg'. The reference to 'six holes' almost certainly means five finger-holes (standard in archaeological finds) plus one blow-hole. The Han dynasty text *Fengsu Tongyi* (c175 ce) and other sources give specific measurements for the flutes of this period. Later sources, such as *Yueshu* (c1100), suggest that by the 12th century there were several varieties of *xun*, most slightly larger, with between six and eight finger-holes (for these and more recent developments, see Chuang, 1972).

The role of *xun* within the ritual ensemble of the imperial court is preserved today in the Confucian ritual in Taipei. Its significance within Confucian ideology is noted in the *Shijing* ('Classic of Poetry', c7th century bce): 'the elder brother plays *xun*, the younger brother plays *chi* [transverse flute]', with an explanation in the commentary that 'our minds, as brothers, must be in harmony', a metaphoric reminder of the need for social accordance within the family. Apart from its use in Confucian ritual, the *xun* has enjoyed a minor renaissance in China since the 1980s within the context of flute recitals.

Related historically is the *chi* (see China, §III; Di) and, outside China, the Korean *hun*, the Vietnamese *huyên* and the Japanese *tsuchibue*.

## BIBLIOGRAPHY

- Chuang Pen-li:** 'A Historical and Comparative Study of Hsün, the Chinese Ocarina', *Bulletin of the Institute of Ethnology, Academia Sinica*, xxxiii (1972), 177–253 [with Eng. summary]
- Cao Zheng:** 'Xun he xunde zhizuo gongyi' [The *xun* and the art of its manufacture], *Yueqi*, (1982), no.4, pp.5–7; no.5, pp.4–6
- Tong Kin-woon:** *Shang Musical Instruments* (diss., Wesleyan U., 1983); repr. in *AsM*, xv/1 (1983), 152–66
- Liu Dongsheng and others, eds.:** *Zhongguo yueqi tuzhi* [Pictorial record of Chinese musical instruments] (Beijing, 1987), 25–34
- Liu Dongsheng and Yuan Quanyou, eds.:** *Zhongguo yinyue shi tujian* [Pictorial guide to the history of Chinese music] (Beijing, 1988), 10–12
- Liu Dongsheng, ed.:** *Zhongguo yueqi tujian* [Pictorial guide to Chinese instruments] (Ji'nan, 1992), 112–13
- Li Chunyi:** *Zhongguo shanggu chutu yueqi zonglun* [Survey of ancient excavated musical instruments from China] (Beijing, 1996), 386–407

## Xu Shuya

(b Changchun, Jilin, 12 May 1961). Chinese composer. He studied composition with Ding Shande and Zhu Jian'er and took cello lessons at the Shanghai Conservatory (1979–83). After continuing there as a lecturer, he moved to Paris in 1988, where he studied at the Conservatoire with Malec, Jolas, Grisey and Bancquart; he remained in Paris to work as an independent composer. Many of his works have featured in festivals across Europe and have been awarded international prizes; his music is performed widely in Asia and Europe by symphony orchestras and contemporary music ensembles.

Xu's early works such as the exquisite *Waiting for Autumn* (1986) and his ambitious Symphony no.1 (1986) betray influences ranging from Debussy to Takemitsu, but once in Paris, he began to count Malec, Höller and Parmegiani among his major sources of inspiration. He has frequently drawn ideas from Chinese Daoism, but for many years these were translated predominantly in terms of Western musical technique. Works like *Choc* (1989), *Chute en automne* (1991) and the brilliant, prize-winning *Cristal au soleil couchant* (1992) display a remarkable complexity, and his in-depth explorations into electronic music are unusual for almost any Chinese composer of his generation. By contrast, his works from the mid-1990s are increasingly based on materials taken from Chinese opera and folk music, and are often less dense in structure. In *Vacuité/Consistance* (1996) and *Dawn on Steppe* (1997) he recaptures the spirit of Chinese and Mongolian folk music, while retaining his superb command of modern instrumentation and counterpoint.

### WORKS

(selective list)

Orch: Vn Conc., 1982; Vc Conc. 'Suo' [Search], vc, 4 perc, pf, str, 1984–6; Fantasy in Autumn, vc, vib, cel, str, 1985; Waiting for Autumn, 4 pic, 2 perc, 2 hp, str, 1986; Sym. no.1 'Curves', 1986; Cristal au soleil couchant, 1992; Dense/Clairsemé, b fl, orch, 1994–5

Chbr: Song of the Miao, str qt, 1982; Choc, 4 vc, 1989; Dongba, 10 insts, 1990; Chute en automne, ens, 1991; Echos du vieux champ, ens, 1992–3; Dongba II, 2 fl, str qt, perc, 1994; Changement/Constance, cl, eng hn, vn, vc, 2 synth, perc, 1994; San, ens, 1995; Vacuité/Consistance, pipa, zheng, ens, 1996

Vocal: Récit sur la vieille route, S, cptr, tape, 1996; Dawn on Steppe, male v, pipa, zheng, ens, 1997; Traces of Songs and Drums, 2 S, orch, 1997

Elec: Taiya, tape, 1990; Taiya II, fl, tape, 1991

Principal publisher: Gérard Billaudot

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## Xylo-marimba.

See Xylorimba.

# Xylophone

(from Gk. *xylon*: 'wood'; Fr. *xylophone*, *claquebois*; Ger. *Xylophon*, *Holzharmonika*; It. *silofono*).

Percussion instrument consisting of two or more bars of graduated length.

1. Distribution and classification.
  2. Europe.
  3. Africa.
  4. South-east Asia and the Pacific.
  5. Latin America.
- BIBLIOGRAPHY**

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GEORGE LIST, LINDA L. O'BRIEN-ROTHER (5)

## Xylophone

### 1. Distribution and classification.

The xylophone may take several different types of construction and form: a set of bars of tuned bamboo, wood or synthetic material, logs or tubes, supported at two nodes of vibration and struck with sticks. There may be one resonator for the instrument (a pit or trough), or there may be individual resonators for each 'key'. (For similar instruments made of stone or metal, see [Lithophone](#) and [Metallophone](#)).

In addition to Western art music, xylophones are found in Africa, Central and South America, South-east Asia (mainland and insular), Melanesia, and the Marquesas Islands in Polynesia. In Europe, xylophones are used in the traditional music of Hungary, Austria, the Czech Republic and other Eastern European countries. Many 20th-century composers have scored for the instrument.

Individual keys may be loose or may be temporarily or permanently attached to a support. They may rest on the legs or thighs of a player, on straw bundles, banana trees, a pit or a trough, or be suspended between supports. Between keys and support, there may be insulating material such as rubber or plastic knobs, grass bundles or strips of cloth to permit free vibration of the keys.

When the keys are suspended, the cord-and-key arrangement may be attached to the sides of a trough resonator or to vertical posts, or one end of the cord-and-key arrangement may be suspended from a vertical post and the other tied to the player's leg or waist to form a curved arrangement. When played, the sounding bodies of the instrument are horizontal, oblique, curved or vertical in relationship to the ground. The instrument may rest on the ground, may be held in playing position by the performer, or may be suspended from a cord hung over his shoulders; the player may sit or stand facing the lengths or the widths of the keys. In the Western orchestral xylophone the keys are arranged as in a modern piano keyboard; elsewhere the key arrangement varies. One, two or three single beaters, or two pairs of beaters may be used to strike the middle or the edges of the keys; the ends of the beaters are usually wrapped with cloth or rubber if the keys are struck in



the middle. One or more people may play the same instrument, or individual sounding parts of an instrument may be distributed among several players. They may be assigned single melodic lines (for one hand or two), octaves, interlocking patterns or rhythmic patterns.

Hornbostel and Sachs classified the xylophone as an Idiophone, 'sets of percussion sticks' (111.212), and divided xylophones into two major types: those with bedded keys and those with suspended keys. Olga Boone, in her study of xylophones in the Belgian Congo (now the Democratic Republic of Congo), published in 1936, delineated two major types: those with free keys and those with permanently fixed keys (the latter divided into those with and those without resonators); she paid particular attention to the ways in which keys and resonators were mounted or attached, tuning patterns, nomenclature and distribution.

In discussing the xylophone's origins in Africa or Asia (based on published theories in favour of Asia), she felt that conclusions were premature and that other, non-musical evidence was needed to support any hypotheses. Later studies by A.M. Jones (1964) and P.R. Kirby (1966) favour Asian origin of the African xylophone but do not provide full supporting evidence. In India and China, the xylophone with trough resonator and suspended keys is considered a foreign instrument, Burmese in origin. Outside China, the xylophone with trough resonator and bedded keys is associated with Chinese communities. In West Java, for example, the [Gambang](#) xylophone is played by the leader of the ensemble (*gambang leromong*) that accompanies song and dance plays at Chinese weddings. As a solo instrument, the *gambang* was played by Javanese females of Chinese ancestry to accompany the singing of *pantun* poetry. In Japan, the *mokkin* with 16 or 17 bedded keys is used in the *geza* off-stage music for *kabuki* theatre. A similar xylophone was associated with Japanese societies that performed Chinese music of the Qing dynasty beginning in the 1820s and 30s.

An instrument that came into Rameau's possession was also regarded as Chinese, though Rameau and later authors did not accept its Chinese provenance (see Schaeffner, 1955). In his discussion of Chinese tunings (*Code de musique pratique*, 1760), Rameau referred to it as *orgue de Barbarie*; he stated that it came from the Cape of Good Hope, and there is reason to believe, in the light of contemporary trade routes, that it may have been brought to the Cape from Java or some other part of the East Indies. After Rameau's death (1764), Burney referred to such an instrument in the possession of Abbé Arnaud as Chinese (*BurneyH*, i, 46). A sketch of the instrument ([fig. 1](#)) appeared in *La Borde (Essai sur la musique ancienne et moderne*, 1780) with the caption 'Instrument Chinois', noting that Rameau improperly called the instrument *orgue de Barbarie*, that it was brought from the Indies and that it belonged at that time to Arnaud. The sketch shows a xylophone with bedded keys, resting over a trapezoidal trough; the shape of the instrument appears to be related to that of similarly constructed xylophones in insular South-east Asia. The shape of the instrument's base, the number of keys and the fanciful beaters provide possible further clues to its origin.

[Xylophone](#)

**2. Europe.**

## (i) History.

The first mention of the xylophone in Europe was in 1511, when Schlick (*Spiegel der Orgelmacher und Organisten*) referred to it as *hültze glechter* ('wooden clatter'). Agricola (*Musica instrumentalis deudsch*, 1529) called a series of 25 wooden bars *Strohfiedel*. Praetorius (*Theatrum instrumentorum*, 1620) showed a series of 15 bars from about 15 to 53 cm in length, arranged diatonically, in a single row, pyramid fashion (as is Agricola's). Mersenne (1636–7) illustrated and described two instruments (given as *claquebois patouilles* and *eschelletes*) on a grander scale. One has 17 bars, which are struck on the underside with individual beaters and arranged as a keyboard (fig.2). In general, however, the European xylophone before modern times was a simple instrument, the wooden slabs loosely strung together, or resting on ropes of straw, giving rise to the name 'straw fiddle' (*Strohfiedel*). It was very much an instrument of the itinerant musician until the 19th century, when it rose to prominence as a solo instrument and attracted the notice of Mendelssohn, Chopin and Liszt, all of whom spoke of the expertise of Michał Guzikow, a Polish Jew. Mendelssohn said, 'I must own that the skill of the man beats everything that I could have imagined, for with his wooden sticks resting on straw, his hammers also being of wood, he produces all that is possible with the most perfect instrument'. Guzikow's instrument consisted of a series of 28 crude wooden bars arranged semitonally, the four rows resting on five straw supports.

During the 19th century the xylophone appeared under various disguises (*xylosistron*, *tryphon* etc.). The orchestral instrument had four rows and was similar in many ways to that of Guzikow. The lowest notes were those nearest the player, with the centre two rows corresponding to the white notes of the piano and the outer rows the black keys. Ferdinand Kauer's *Sei variazioni* (c1810) contain solo passages for the xylophone, possibly the earliest orchestral use of the instrument. In 1852 it was mentioned in J.-G. Kastner's *Les danses des morts*. Better known is Saint-Saëns's use of the instrument to represent the rattling of the bones of the dead in his *Danse macabre* (1872), and later (as 'Fossiles') in *Le carnaval des animaux* (1886). The playing technique of the four-row instrument was totally different to that of the modern xylophone, and apparently sightreading was particularly difficult. The modern xylophone originated around the turn of the century, although the four-row instrument is still used in Eastern Europe. Early 20th-century composers to use the xylophone include Mahler (Sixth Symphony, 1903–4); Puccini (*Madama Butterfly*, 1904); Strauss (*Salome*, 1903–5); Elgar (*Wand of Youth*, Suite no.2, 1908); Debussy (*Ibéria*, 1910); Stravinsky (*The Firebird*, 1909–10); and Delius (*Eventyr*, 1917). In his final work (*Turandot*, completed by Alfano, 1926) Puccini wrote for xylophone and *xylofon basso* (the latter part is usually now played on a marimba using fairly hard sticks). An extended (and florid) part for xylophone occurs in the third movement of Havergal Brian's Symphony *The Gothic* (1919–27).

Complex writing for the xylophone has revolutionized its use compared with the demands of earlier composers, who, with occasional exceptions such as Stravinsky in *The Wedding* (1923), asked only for short passages. The demands on the modern xylophonist are heavy, especially in Tippett's *The Vision of St Augustine* (1960–5) and many of his subsequent compositions, as well as works by Boulez and Messiaen. Boulez's *Le marteau sans maître*

(1953–5, rev. 1957) in particular was quite widely regarded as being unplayable when it was first published. Works using the xylophone as a solo instrument include Alan Hovhaness's *Fantasy on Japanese Woodprints* (1965) and Thomas Pitfield's *Sonata for xylophone* (1965). The keyboard xylophone is now virtually obsolete, the tone quality always having been very inferior; but Bartók scored for it (*Tastenxylophon*) in *Bluebeard's Castle* (1911; nowadays the part is usually played on two xylophones).

The xylophone part is normally written (mostly in the treble clef) an octave lower than its sounding pitch, although both Messiaen and Birtwistle have mostly (but not always) notated xylophone parts at sounding pitch. Normally only one staff is used; rare exceptions include Ravel's *Ma mère l'oye* (1908–10; 'Laideronette'), where it is given a double staff.

## **(ii) Construction.**

The arrangement of the modern European instrument follows that of a piano keyboard, and, as is the practice with bar-percussion instruments, the bars are suspended from cords passing through their node points, or rest on a cushion of felt or similar insulation. In general the row of bars corresponding to the black notes of the piano is raised, keyboard fashion. The compass of the orchestral xylophones in general use is either four octaves ascending from *c'*, or three and a half octaves ascending from *f'* or *g'*(fig.3). The larger instrument is preferable for the demands of modern composers. The bars are of the finest rosewood (or wood of a similar resonant and durable quality), or of new synthetic bar materials such as Kelon (a pultrusion silicate) or Klyperon, prepared from synthetic reinforced resins. Synthetic bars are generally regarded as having an inferior tone quality. The pitch of each bar is governed by its length and depth; the shallowing of the underside of the bar lowers the pitch considerably. In the modern orchestral xylophone each bar is suspended over a tube resonator in which the air-column frequency matches the pitch of the bar. The bars give a bright penetrating sound when struck with hardheaded mallets. Softer beaters produce a mellow sound and are specially useful on the lower notes.

## **Xylophone**

### **3. Africa.**

(i) Introduction.

(ii) Free key xylophones.

(iii) Fixed key xylophones.

Xylophone, §3: Africa

#### **(i) Introduction.**

Oral traditions mention the xylophone in the 13th-century kingdom of Mali; the first written reference, also from Mali, comes from the mid-14th century. Describing two Muslim festivals at the court, Ibn Battūta (*Travels in Asia and Africa*, trans. H.A.R. Gibb, 1929) mentioned an instrument made of reeds with small calabashes at its lower end. In the second half of the 16th century, dos Santos, a Portuguese missionary living among the Karanga in what is now Mozambique, mentioned the *ambira*, a gourd-resonated instrument. From the mid-17th century onwards, European travellers to the western coasts of the continent refer to the instrument, most often with calabash resonators; the most common names for it were *bala*, *balafo(n)* and *ballard(s)* in West Africa

(see [Balo](#)) and *marimba* in the Bantu-speaking areas – the same terms used by writers referring to the instrument in the Caribbean and Central and South America.

Early 20th-century studies of the African xylophone in Europe paid particular attention to organological features of instruments in the Berlin and Tervuren museum collections. Olga Boone focussed on construction details and tuning measurements of xylophones of the Belgian Congo (now the Democratic Republic of the Congo) according to ethnic origin, the distribution of xylophone types there and in other areas of Africa, and the social context of the instrument. She examined 108 xylophones at the Musée du Congo Belge (now the Musée Royal de l’Afrique Centrale) in Tervuren. In her descriptions, discussion proceeds from the simpler instruments to the more complex; however, she stated that her order of categories did not necessarily represent stages of evolution. The present discussion is primarily concerned with the physical characteristics of the instrument, based on the types distinguished by Boone; additional types are included for those instruments not found in the Democratic Republic of the Congo (DROC). There are two main categories of xylophone: those with free keys, in which the keys are independent of each other and their support, and those with fixed keys, in which the keys are permanently attached between themselves and to their support.

[Xylophone, §3: Africa](#)

#### **(ii) Free key xylophones.**

For performance, loose keys are assembled on temporary supports, which may consist of the player’s legs, banana-tree trunks, straw bundles, or logs padded with grass. Keys may be completely loose with upright sticks placed between them to prevent their striking each other and stopping vibration. Alternatively, holes may be bored at the side of the key near each end through which a cord is strung and twisted around the dividing upright sticks. Sticks may also be placed vertically between keys at one side of the instrument and through a hole in the middle of each key at the other side. Keys are normally struck at their ends with wooden sticks.

A xylophone type intermediate between free and fixed keys is found among the Sena people in central Mozambique and the Lozi in western Zambia, where keys strung to each other are temporarily mounted on straw bundles; performers may strike the middles of the keys with wooden or rubber-tipped sticks.

*(a) Leg xylophones.* Keys are mounted on the player’s upper thighs, or (as in Madagascar), from the knees to the ankles. The instrument is played by young girls or boys as part of initiation activities in Senegal; it is also used as a device to keep birds and monkeys out of gardens. The instrument’s resonance may be enhanced by a depression in the ground, or by a pot or calabash placed underneath it (fig.4a). Two to seven keys are played by one or two players.

Distribution: Senegal, Guinea, Sierra Leone, Côte d’Ivoire, Togo, Benin, south-east Nigeria, Central African Republic, Zambia, Malawi and Madagascar.

(b) *Pit xylophones*. A pit may be an integral part of the free key xylophone. Four to 13 keys are mounted across grass bundles or banana-tree trunks placed at opposite sides of a pit. Among the Yoruba in south-west Nigeria and the Gun in south-east Benin, two such xylophones are played together, one or both instruments over a pit. If the instrument is large, the player sits between two groups of keys with his legs in the pit. This type of xylophone may be used as a practice instrument, as in north-west Ghana, where it is played by children, students of the instrument and adults without a gourd-resonating xylophone. Among the Luba of southern DROC, the tuning of the keys for an instrument which will have individual resonators is tested by laying them across a pit, mounting them on banana-tree trunks or across a calabash.

Distribution: Guinea, Burkina Faso, Ghana, Benin, Nigeria, Chad, Central African Republic, south-east Democratic Republic of the Congo, north-west Uganda and southern Malawi.

(c) *Log xylophones*. Instruments consisting of free keys resting across banana-tree trunks, or a combination of straw bundles (for insulation) and banana-tree trunks, are found in many parts of sub-Saharan Africa. They have from six to 22 keys, which are usually larger than those of any other type of African xylophone. It is common for two, or as many as six players, to interlock different melodic patterns on the same instrument (fig.5), or two players facing each other may each play one instrument (see fig.4b). The ends of the keys are usually struck with one or two plain wooden beaters.

Distribution: Guinea, Liberia, Côte d'Ivoire, Nigeria, Cameroon, Gabon, Central African Republic, Chad, northern Democratic Republic of the Congo, Malawi, Mozambique, Tanzania, Uganda and south-west Ethiopia.

Xylophone, §3: Africa

### **(iii) Fixed key xylophones.**

#### **(a) Without calabashes.**

Keys are mounted on runners, or a resonator, such as a box or trough, to which insulation material is attached. In north-west DROC, two pairs of beaters are used by one player, and adjacent keys are commonly tuned in octaves. The instrument on runners, found in north-west DROC and among the Yaka in south-west DROC, may have crosspieces at the ends to keep the runners apart. The instrument with keys resting on a trough resonator is found in north-west DROC, south-east Nigeria and central Mozambique. The box-resonated xylophone is found near the south-east coast of Kenya, on the islands of Zanzibar and Pemba and in north-east Tanzania. Among the Igbo of south-east Nigeria, two keys are attached to a grass collar which covers the top of an open clay pot.

#### **(b) With one or two calabashes (individual resonators).**

A key is suspended from cords strung through holes near its ends and attached to the upper ends of two arcs glued to the top of the resonator. The player changes the instrument's timbre by alternately closing and opening the mouth of the resonator with the left hand. The instrument may be played in

groups of two or more, with each one tuned differently, and is commonly used at hunting ceremonies.

Distribution: south-east Democratic Republic of the Congo, Zambia and southern Malawi.

Parallel curved poles and two crosspieces form the support frame of an instrument with two calabashes. The ends of the cords which suspend the keys pass over the crosspieces and are tied to the ends of the poles, and the calabashes are suspended on rods placed in holes in each of the poles.

Distribution: among the Chokwe and Lunda of south-central Democratic Republic of the Congo and the Luvale of eastern Angola.

### **(c) With multiple calabashes.**

Instruments differ from area to area in their type of frame construction, and the attachment of keys and calabashes. Many xylophones in the DROC and its neighbouring areas have in common an arc, or bail, which is attached to the sides of the frame (see types 1–3, 5–6 below). The bail keeps the instrument in the proper playing position in front of the player when it is slung from his shoulders. When the player is seated, he may stabilize the instrument by balancing the bail with his feet. The keys may rest on some type of insulation material or on leather cords, or they may be suspended. Calabashes may be hung from the framework or glued to a frame; they are either suspended directly by rods, or by strings secured to rods fastened across a horizontal frame. The calabashes may be glued to a centre board, which may have holes to accommodate them. While a round or elongated calabash is the most common resonator, bamboo, cattle horn or wood is also used. Buzzing devices are attached to one or more holes in the bottom or at the side of each resonator; when they are attached to the side, ancillary tubes or round pieces of calabash may be added to protect the membranes. The instrument is played with one to four rubber-tipped beaters, and the keys are struck in the middle; occasionally two players may play the same instrument. Several different xylophones may be played in the same ensemble.

*Type 1: with resonators suspended from rods (Boone 3a).* Two runners are attached to the ends of the bail and insulation is fixed to their top edge; rods pierce the calabashes near their tops and pass through holes in the sides of the runners. Rattan is intertwined around the tops of the calabashes to secure them. The keys are strung together by cords and rest on the insulation. Some contemporary instruments do not have a bail but have been modified by the addition of legs inserted between the ends of the runners and the crosspieces at the end of the instrument, so that the player is in a standing position.

Distribution: south central and south-east Democratic Republic of the Congo, south-west Zambia and southern Malawi.

*Type 2: with suspended keys (Boone 3b).* Parallel curved poles constitute the frame for this instrument. The keys are strung on two cords which pass over the crosspieces or ends of the bail and are tied to the ends of the poles and the crosspieces or ends of the bail. The calabashes are strung on cords and are fixed to a rattan cord encircling the poles. On large instruments with a more pronounced curve from the middle of the keys to either end of the instrument (found among the Lunda and Chokwe of Angola), the suspended

calabashes are supported by rods which pass through holes in the poles; the suspended keyboard is held firm by another cord which goes through the cord on the underside of the keys and is attached to the poles. On the xylophone of the Nsenga people in central Zambia, the cord from the underside of the keys to the runners also secures the rods that suspend the calabashes. This instrument is fixed between poles set vertically in the ground, and the keys are also hung vertically; on the Lunda and Chokwe instruments, the plane of the keys is oblique to the ground. When two Chokwe instruments are played together, the second may consist only of keys suspended between vertical poles, with a round pit in the ground below the middle of the keyboard. Distribution: south-west Democratic Republic of the Congo, eastern Angola and central Zambia.

*Type 3: with quadrilateral frame.* This combines characteristics of types (1) and (2), and appears to have been modified early in the 20th century. The support now consists of a four-sided frame with parallel ends whose sides taper towards the smallest keys. A bail is attached to the ends of the frame, and insulation material is fixed to the upper edges of its sides. The calabashes are suspended from rods placed in holes in the sides of the frame and are hung below their respective keys in order to obtain the best vibration. Thus the arrangement of the resonators is staggered. The keys formerly rested on the insulation material, a cord passing through a hole in the far side of the key, under another cord attached to the insulation material, back to the surface through the same hole, and under the insulation cord between keys; on the near side, a cord went over the key and through the insulation material between keys. An additional pair of thicker cords is now added to suspend the keys from the top, passing through the key attachment cords. In effect, the thin cords become loops for the suspension cords between keys and between the holes. The suspension cord passes under a thin cord strung through two vertical holes on the far side of the key, and is knotted to the thin cord between keys; on the near side, the thick cord passes through the thin cord between keys.

Groups of four or five different sizes of these xylophones are part of the *mendzan* ensemble in Cameroon and Gabon; each instrument has its own name and may overlap in pitch with the instrument next in size. One such ensemble in Cameroon has individual instruments with 11, 11, 10, 4 and 4 keys, while such an ensemble in Gabon consists of instruments with 9, 9, 8, 6 and 2 keys. Reserve keys are added to the larger instruments during construction. Thick beaters made of soft wood are used to strike the middle of the keys. Distribution: south and south-central Cameroon and northern Gabon.

*Type 4: with calabashes suspended obliquely.* Two horizontal poles extending through holes in side pieces that rest on the ground form the support for this instrument, which is over six feet long. Elongated calabashes, with an oblique cut at one side of their mouths, are suspended from the pole nearest the player and are secured by a thick supporting rope of braided bark to the second pole, so that they are almost parallel to the ground when the instrument is in a playing position. The 21 or 22 rectangular keys rest on thongs stretched across the poles, and are tuned to a heptatonic scale by thinning the centre of the playing side to leave a raised portion from the nodal point to each end, where designs are carved. The keys are strung together by

a thong which passes through a hole in the flat section of the key at the edge of the raised portion, goes around the support thong and passes back to the surface through the same hole. The instrument is played by two men, using a total of five beaters. The player of the highest-pitched keys begins the performance with an ostinato pattern played in octaves or other intervals, or with a single melodic line distributed between his two hands. The player of the lowest keys interlocks a different melodic pattern with his right hand, and adds a rhythmic bass pattern characterized by repeated pitches with two beaters in his left hand. The ends of these beaters are crossed in his hand so that they are spread in an angle of almost 90°, facilitating wide leaps. The Venda instrument, *mbila mtondo*, was formerly an important instrument played at the chief's *kraal*. Distribution: northern Transvaal, among the Venda, Kwebo and Lovedu.

*Type 5: with centre board and bridges (or distance pieces) (Boone 3c).* The frame of the instrument consists of a flat centre board with calabash resonators inserted into circular holes, and wooden bridges tied across the board between the holes. The ends of the bridges are tied to each other by leather thongs, which extend the length of the instrument and also serve as tension thongs to support the keys which are strung together by another set of cords. On some instruments insulation is attached to the edges of the centre board. The calabashes are fixed to the centre board by resin applied to the edges of the holes on both sides of the board. In Nigeria, the resonators are long and slender calabashes, cowhorns (for illustration see [Nigeria, §8, fig.2](#)) or wooden cones in the shape of cowhorns. For the ten-key instruments of the Azande in north-east DROC, a pair of beaters in each hand enables the player to strike octaves on adjacent keys. The most common tuning pattern (where numbers indicate the degree of the pentatonic scale) is: 2.2'.3.3'.4.4'.5.5'.1'.1, with the lowest octave pair on the player's right. Among the Chopi of Mozambique, the centre board has two tenons on each end that fit into holes in the legs of the instrument, while the ends of the curved or rectangular bail fit over the tenons. The keys rest on tension thongs and are supported by thin wooden bridges attached by fibre to the centre board between each pair; the tension thongs pass through holes near the ends of the bridges. The keys are strung together by a pair of long leather cords. The cord further from the player passes through a hole in the key, under the supporting tension thong and back to the surface through the same hole; the near cord goes over each key and under the tension thong between keys ([figs.7 and 8](#)); see also [Marimba, §1, fig.1](#)). Distribution: (with bridge between keys): east central Nigeria, northern Cameroon, southern Chad, south-west Central African Republic, north-east Democratic Republic of the Congo and southern Sudan; (with bridge between pairs of keys): southern Mozambique and northern Transvaal.

*Type 6: with centre board and insulating cushions (Boone 3d).* This instrument is similar to the preceding one, except that the keys rest on insulating cushions mounted at some distance parallel to and on either side of the centre board, rather than on cords stretched between bridges. The centre board and the insulating cushions, which consist of fibre, bark cloth or some other type of material covering wooden branches, are attached to the ends of the curved bail, though on some instruments the insulation is attached to the edges of the centre board. Some instruments have bridges; some have calabashes suspended from a piece of rattan, the ends of which are inserted



into the insulating cushions. In some areas, four beaters are used by each player. In north-west DROC, adjacent keys are tuned in octaves, usually in the order: 2.2'.3.3'.4.4'.5.5'.1'.1. Distribution: north-west Democratic Republic of the Congo, south central Central African Republic and southern Chad (with bridges).

*Type 7: with centre board set within oval frame.* An oval-shaped wooden bar surrounds the entire instrument. The keys are suspended, and the cowhorn resonators are glued and tied to the solid curved base, the back of which is etched with abstract designs. Six to eight keys are encircled by cords near the ends of each key, and the ends of the cords are attached to the oval frame; they are in an oblique position to the mouths of the resonators. The seated player supports the instrument between his knees at the middle of the oval frame, and a pair of Y-shaped wooden beaters allows him to strike octaves simultaneously. The keys on a Bura instrument, the *tsindza*, are arranged: 3.4.5.1'.1.2'.2. Distribution: north-east Nigeria.

*Type 8: with open frame.* Keys are mounted on an open framework consisting of four vertical and eight horizontal strips of wood lashed together. Round calabash resonators are suspended below each key by means of suspension rods that extend across and beyond the limits of the upper horizontal frame. In order to accommodate all the resonators within the framework, they are arranged in zigzag fashion, forming two rows. The suspension rods for the resonators are secured to the frame by leather strips; another long cord or leather strap serving as insulation for the resting keys then passes over the rods and a third long twisted cord secures the keys together on each side of the instrument. The latter cords are tied to the tops of the vertical posts, and sometimes also to the horizontal crosspieces at each end of the instrument. The physical size of the instrument varies. The smaller instruments (in the west and central area of distribution) may rest on the ground, or be slung from the shoulders with the instrument perpendicular or parallel to the body. The surface of the keyboard is slightly curved at the broader end of the instrument, where ogee-shaped horizontal crosspieces also accommodate the larger calabashes within the frame. The larger instruments (in the eastern area of distribution) rest on the ground in performance. The curvature of the keyboard is more pronounced, allowing room for the large resonators and making the entire keyboard easily accessible. The number of keys ranges from 12 to 21. Tuning is predominantly heptatonic, though the instruments of Burkina Faso, Ghana and Côte d'Ivoire are pentatonic. The player uses a pair of rubber-tipped beaters, and may also wear bells around his wrist. The generic term for the instrument is *balo* or *bala*. In the eastern area of distribution, a commonly used term is *gyil*, with prefixes or suffixes to denote specific types, sizes or contexts of usage. Xylophones are often played singly or in groups with other instruments. To the west, among Manding-speaking peoples, it is often played by professional musicians of the *jali* caste; in Burkina Faso, Ghana and Côte d'Ivoire, it is an important instrument at funeral ceremonies. Distribution: Senegal, the Gambia, Guinea, Sierra Leone, Liberia, north-east Côte d'Ivoire, Mali, south-west Burkina Faso and north-west Ghana.

Xylophone

#### **4. South-east Asia and the Pacific.**

### (i) Insular South-east Asia.

Of the many different types of xylophones found in this area, the instrument with keys resting on cloth or rattan strips at the edges of a wooden trough (trough xylophone with bedded keys) is commonly associated with [Gamelan](#) and other ensembles in various parts of Indonesia. Xylophones with suspended keys or tubes are found in the greatest variety. A few examples of a type with keys suspended over individual resonators are found in Bali (e.g. in *gamelan gandrung*), but that island's most ancient ensembles (*caruk*, *gambang* and *luang*) have a trough-resonated xylophone with suspended keys. A common term for the xylophone in South-east Asia is *gambang* (*gabbang*, *gambangan*), but it may mean a different type of instrument depending on the ensemble in which it is used; in Sabah, Malaysia and the southern Philippines, *gabbang* always refers to a trough xylophone with bedded keys, played with rubber-tipped beaters which are curved on the underside and delicately carved in a bird- or kidney-shape.

### (ii) Mainland South-east Asia.

Comparatively few xylophone types are found on the mainland. A two- or four-key xylophone has been reported in West Malaysia. Suspended tubes or wooden keys in a rope ladder arrangement are found in central Vietnam and north-east Thailand. Among the Jörai, Bahnar and Rhade people in Vietnam, the *torung* consists of 14 to 20 tubes suspended between the two players, one of whom holds an end of the cord; the other end is tied to the second player's leg. In Thailand, the *kaw law* or *bong lang* with 12 wooden keys is played by the Lao people in Kalasin province. The upper end of the instrument is tied to a tree and the lower end to the player's leg. These instruments resemble the *calung renteng* of West Java.

Groups of ten players, each with a xylophone with one key suspended over a coconut resonator (*kertuk kelapa*), compete with similar groups in West Malaysia; two such instruments may also accompany the harvest dance. The trough-resonated xylophone, [Gambang](#), with bedded keys is found only in the Malaysian court *gamelan* of Trengganu, where it accompanies the *joget* dance. The xylophone with keys suspended over a trough resonator is important in instrumental ensembles in Thailand, Cambodia and Laos, and is also used for chamber music in Myanmar. The *ranāt ēk* (see [Ranāt](#)) is featured in the Thai *pī phāt* and *mahōrī* ensembles. It has 21 keys suspended over a curved resonator and resting on a pedestal. In some types of *pī phāt* a larger xylophone (*ranāt thum*) is added ([fig.9](#)); 16 keys are suspended over a rectangular shaped resonator, with sloping sides and a curved upper surface. The same type of xylophone may have been used in an ensemble that accompanied the *ashek* dance at the 16th- and 17th-century Malay court of Patani, and later at the Kelantan court (see Malaysia, §I, 1(iv)).

In Myanmar, the *pat-talà* with 20 to 25 (usually 24) keys suspended over a curved resonator and resting on a pedestal is played with the end-blown flute (*palwei*), or in chamber music as vocal accompaniment; it is taught by *hsaing-waing* musicians as a beginner's instrument. It was also played at the Chinese court during the Qing dynasty (1644–1911); a description (in the *Da Qing huidian*, 1899) of the smaller of two Burmese ensembles that played for banquets includes the 22-key '*pat-talà*', as well as harp, the *mī-gyaùng* zither, a three-string bowed lute, the *palwei* flute, a drum and a pair of cymbals.

### (iii) Pacific.

The leg xylophone is found in scattered areas in west Melanesia, and is used primarily for courtship; in some areas, women are not allowed to see it. The instrument has been found on the Gazelle Peninsula of New Britain, on New Ireland, the Duke of York Islands and Tami Island, and in Morobe Province of eastern Papua New Guinea. Usually two wooden keys (convex on the upper side, flat on the under side) are laid over the player's thighs and are struck with two sticks. The player may sit with his legs over a pit or over a mound of earth; alternatively, the keys may rest on banana trees or wooden branches. Names for the instrument include *tinbuk*, *timbuk*, *timbul*, *tinbut*, *timboik*, *tutupele*, or *lau lau*. The two-note instrument is used for playing signal patterns. On New Ireland and the Duke of York Islands, the xylophone is played for dancing; only on Tami Island have women been known to play the xylophone. Its sound draws the attention of males undergoing initiation to the women's presence, and thus keeps them apart.

### Xylophone

## 5. Latin America.

The xylophone in Latin America, known as the 'marimba', is found in Mexico, Belize, Nicaragua, Costa Rica, El Salvador, Guatemala, Colombia, Ecuador and Brazil; in Suriname (as *gambang*) it is used in gamelan ensembles by musicians of Javanese descent. In Brazil, however, it has lost its former importance as a solo instrument, and is now used only to accompany such dramatic dances as the *congada*. The two types of marimba still in use are portable and have six and eleven keys respectively, struck with wooden sticks.

In Guatemala, the marimba is the most popular folk instrument, and has come to be a symbol of the independence of the Guatemalan Republic (see [Guatemala, §II, 1](#)). It is believed to be of African origin, introduced during the early colonial period by African slaves. This argument, which is not undisputed, rests mainly on the similarity of the *marimba de tecomates* (the original form of the Guatemalan instrument) to African xylophones, the African derivation of the word 'marimba' and the lack of archaeological evidence for the existence of marimbas in pre-Columbian America.

The earliest account of the marimba in Guatemala is found in the work of Domingo Juarros, a 17th-century historian, who lists it among instruments played by Amerindians in 1680. During the 18th century it became widely dispersed among Amerindians, and its presence is noted at public events, both civil and religious. The growing popularity of the marimba among Ladinos in the 19th century led to the expansion of the keyboard to five and, later, six and seven octaves, allowing the addition of a fourth player to the normal practice of two or three players. During the celebration of national independence in 1821, the marimba took its place as the national instrument.

In the highlands of Chiapas in Mexico, in Guatemala, in north-west Costa Rica and south-west Nicaragua near Masay, marimbas show resemblance to African xylophones. The *marimba de tecomates* is a xylophone consisting of a keyboard of parallel tuned wooden bars or percussion plates suspended above a trapezoidal framework by cords which pass through threading pins and the nodal points of each key (fig.10). Beneath each key hangs a tuned

calabash resonator, near the base of which a vibrating membrane of pig intestine is fixed to a ring of wax surrounding an aperture. This functions as a mirliton or sound modifier that produces a characteristic buzzing called *charleo* when the keys are struck. The older form of this marimba, the *marimba de arco*, is portable, and is carried by means of a strap attached to the ends of the frame and passing across the player's shoulders. The keyboard is kept from touching the player's body by an arched branch (*arco*) which is fixed to the framework on the plane of the keyboard. A later type has four legs and lacks the *arco*. The nearly diatonic keyboard contains 19 to 26 keys. A key's pitch may be raised during performance by applying a lump of wax, sometimes mixed with bits of lead, to its underside. For this reason such marimbas are called *marimba de ceras* ('of wax'). The keys are struck with mallets (*baquetas*) made of flexible wooden sticks with strips of raw rubber wrapped round the ends to form a ball. The tips of the mallets intended for bass keys are soft; those for treble keys are harder and smaller. From one to three players hold a mallet in each hand, or two in one hand, and one in the other, the pair of mallets held in one hand often striking different keys at the same time. Other pitches may be produced by striking the extreme ends of the keys with the wooden end of the mallet. While the *marimba de tecomates* is now seldom played by Guatemalan Ladino musicians, who prefer the more Westernized forms of the instrument, in Amerindian highland Guatemala the surviving repertory is different from that of the rest of Mexico and Central America, some of it distinct from European tradition. It serves in both public and ritual contexts.

During the last quarter of the 19th century, the *marimba sencilla* was developed, in which *cajones harmonicos*, wooden boxes constructed to resemble gourds, were substituted for the gourd resonators. In other particulars of construction and tuning, the *marimba sencilla* is identical to the *marimba de tecomates*. During this period, the *marimba de cinchos* (also called *marimba de acero*, *marimba de hierro*) with metal keys and box resonators, became popular, and was played with guitar accompaniment. Types with glass keys, and others with bamboo-tube resonators, were also developed.

The addition of chromatic keys to the diatonic keyboard was a late 19th-century development, usually attributed to Sebastian Hurtado in 1894. The name of this type, *marimba doble*, refers to the double row of keys for diatonic and chromatic pitches. Unlike the arrangement of a piano keyboard, in which sharp keys fall to the right of their corresponding naturals, in many Guatemalan instruments the sharps are placed directly behind the naturals.

The *marimba doble* is often played in pairs: the larger, the *marimba grande*, has a range of six and a half octaves (about 78 keys) and uses four players; the smaller, the *marimba cuache* (also called *marimba piccolo*, *marimba requinta*, *marimba tenor*), has a range of five octaves (about 50 keys) and uses three players. To these two instruments are often added a three-string bass, snare or bass drums, cymbals, accordion and wind instruments such as saxophones, trumpets or clarinets. While the folkloric character of contemporary *marimba doble* ensembles is somewhat obscured by the influences of popular Latin American and North American styles on its instruments and repertory, highland village *marimba sencilla* ensembles still maintain traditional style and repertory.

The marimba in Colombia may have as many as 25 keys or as few as 21, though 24 is usual. The keys are made of various palm woods, but most frequently of *chontaduro*. Each key has a resonator consisting of a section of *guadua* bamboo. The keys are placed on the frame in a single row in groups of four, each group being separated from the other by a *pasador* (crosspiece) of *chonta*. The *pasadores* are part of the framework that supports the keys and resonators and also function as points of visual reference for the players. Beginning at the top of the keyboard with the smallest key and moving downwards, the groups of four keys are known alternately as *tablas duras* and *tablas blandas* (i.e. hard and soft). In a group of eight the highest *dura* and the lowest *blanda* form an octave. A keyboard of 24 keys is thus composed of three disjunct octave segments: 8765 4321, 7654 3217, 6543 2176. The seven highest keys are tuned to produce approximate neutral 3rds between keys 8, 6, 4, 2 and keys 7, 5, 3. The remaining keys are tuned in octaves with the keys above them. On the marimba itself the keys are of course arranged in reverse order from that indicated above. The highest octave segment is to the right and the lowest to the left. Each of the two players uses two sticks tipped with small balls of raw rubber; one plays the *bordón* (an ostinato lower part), the other the *requinta* or *tiple* (upper part).

The *marimba-orquesta*, an ensemble incorporating a marimba, is widespread; such groups are widely popularized in Mexican tourist centres. The instruments are frequently municipal property, and musicians may be exempt from certain other civic responsibilities by virtue of their service in these groups. The ensemble plays music from the *son* repertory, and makes constant use of [Corrido](#) accompaniments. The tradition is strongest in the state of Chiapas and, until recently, in the southern half of the Isthmus of Tehuantepec where it is being replaced by ensembles playing *música tropical*. The term marimba refers both to the instrument and collectively to the musicians of the ensemble, while the musicians individually are called *marimbistas*.

In the urban centres of Mexico and Guatemala, the marimba ensemble is principally an interpretative medium rather than a primary source of original music. In its repertory, the marimba is greatly influenced by popular styles but itself exerts little influence on other styles. It is a regional ensemble, but unlike others, it has an unlimited eclectic non-regional repertory, as well as a small, limited core repertory of *sones* exclusively typical of marimba ensembles. Marimba ensembles commonly play mainstream popular music including rock, *tropical* and other styles. The ensemble is flexible and may include electric guitars, electronic keyboards, etc. National popularity and prestige are won by those who are recorded commercially, most of whom are recruited in Chiapas, Mexico, where marimba ensembles develop markets through public performances. The majority of marimba ensembles are financially marginal. The marimba players wear no traditional costume, and seldom have accompanying singers, although the combination of mariachi ensemble and marimba is gaining popularity.

In Colombia and Ecuador, the marimba tradition is found exclusively among peoples of coastal African cultures.

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**BIBLIOGRAPHY**

## general and european

*Bladesl*

*MersenneHU*

*PraetoriusSM, ii*

*PraetoriusTI*

*SachsH*

**C. Sachs:** *Handbuch der Musikinstrumentenkunde* (Leipzig, 1920, 2/1930/R)

**C. Sachs:** *Geist und Werden der Musikinstrumente* (Berlin, 1929/R)

**G. Jacob:** *Orchestral Technique* (London, 1931, 3/1982)

**A. Schaeffner:** *Origine des instruments de musique* (Paris, 1936/R, enlarged 3/1994)

**A. Schaeffner:** 'L'orgue de barbarie de Rameau', *Mélanges d'histoire et d'esthétique musicales offerts à Paul-Marie Masson* (Paris, 1955), ii, 135–52; repr. in *Essais de musicologie et autres fantasies* (Paris, 1980)

**B. Sárosi:** *Die Volksmusikinstrumente Ungarns* (Leipzig, 1967)

**E. Richards:** *World of Percussion* (Sherman Oaks, CA, 1972)

**L. Kunz:** *Die Volksmusikinstrumente der Tschechoslowakei* (Leipzig, 1974)

**J.A. Strain:** 'Published Literature for Xylophone (c1880–c1930)', *Percussive Notes*, xxxi/2 (1992), 65–98

## africa

**E.M. von Hornbostel:** 'The Ethnology of African Sound-Instruments', *Africa*, vi (1933), 129–57, 277–311

**P.R. Kirby:** *The Musical Instruments of the Native Races of South Africa* (London, 1934, 2/1965)

**O. Boone:** *Les xylophones du Congo Belge* (Tervuren, 1936)

**S. de Ganay:** 'Le xylophone chez les Sara du Moyen Chari', *Journal de la Société des africanistes*, xii (1942), 203–39, pl.8

**B. Costermans:** 'Muziekinstrumenten van Watsa-Gombari', *Zaire*, i (1947), 515–42, 629–63

**H. Tracey:** *Chopi Musicians: their Music, Poetry and Instruments* (London, 1948/R)

**W. Fagg:** 'A Yoruba Xylophone of Unusual Type', *Man*, I (1950), 145 only

**F.-J. Nicolas:** 'Origine et valeur du vocabulaire designant les xylophones africains', *Zaire*, xi/i (1957), 69

**F.J. de Hen:** *Beitrag zur Kenntnis der Musikinstrumente aus Belgisch Kongo und Ruanda-Urundi* (Tervuren, 1960)

**D.T. Niane:** *Soundjata: ou l'épopée mandingue* (Paris, 1960; Eng. trans., 1965/R)

**L. Bouquiaux:** 'Les instruments de musique Birom (Nigeria Septentrional)', *Africa-Tervuren*, viii/4 (1962), 105–11

**A.M. Jones:** *Africa and Indonesia: the Evidence of the Xylophone and Other Musical and Cultural Factors* (Leiden, 1964, enlarged 2/1971)

**P.R. Kirby:** 'The Indonesian Origin of Certain African Musical Instruments', *African Studies*, xxv (1966), 3

*Folclore musical de Angola/Angola Folk-Music*, ii: *Povo Quico area do Camissombo, Lunda/Chokwe People, Camissombo Area, Lunda District* (Lisbon, 1967) [incl. recordings]

**L.A. Anderson:** 'A Reassessment of the Distribution, Origin, Tunings and Stylistic Criteria in African Xylophone Traditions', *African Studies Association XI: Los Angeles 1968* [unpubd paper]

- L. Anderson:** *The Miko Modal System of Kiganda Xylophone Music* (diss., UCLA, 1968)
- P.R. Kirby:** 'Two Curious Resonated Xylophones from Nigeria', *African Studies*, xxvii/3 (1968), 141–4
- F. Bebey:** *Musique de l'Afrique* (Paris, 1969; Eng. trans., 1975 as *African Music: a People's Art*)
- G. Rouget:** 'Sur les xylophones équiheptaphoniques des Malinké', *RdM*, lv (1969), 47–77
- H. Zemp:** *Musique Dan: la musique dans la pensée et la vie sociale d'une société africaine* (Paris, 1971)
- G. Innes:** *Sunjata: Three Mandinka Versions* (London, 1974)
- P.-C. Ngumu:** *Les mendzang: des chanteurs de Yaoundé: histoire, organologie, fabrication, système de transcription* (Vienna, 1976)
- N. McLeod:** 'Musical Instruments and History in Madagascar', *Essays for a Humanist: an Offering to Klaus Wachsmann*, ed. C. Seeger and B. Wade (New York, 1977), 189–215
- M. Omibiyi:** 'Nigerian Musical Instruments', *Nigeria Magazine*, cxxii–cxxiii (1977), 14–34
- J. Gansemans:** *Les instruments de musique Luba (Shaba, Zaire)* (Tervuren, 1980)
- J. Meel:** 'Verspreiding en verscheidenheid van de xylofoon in Afrika', *Africa-Tervuren*, xxvii/3 (1980), 79
- A.A. Mensah:** 'Gyil: the Dagara-Lobi Xylophone', *Journal of African Studies*, ix/3 (1982), 139–54

#### **south-east asia and the pacific**

- R. Shelford:** 'An Illustrated Catalogue of the Ethnographical Collection of the Sarawak Museum: Musical Instruments', *Journal of the Royal Asiatic Society*, xl (1904), 3–59
- C. Sachs:** *Die Musikinstrumente Indiens und Indonesiens* (Berlin, 1915, 2/1923/R)
- W. Kaudern:** *Musical Instruments in Celebes* (Göteborg, 1927)
- J. Kunst:** *Hindoe-Javaansche muziek-instrumenten* (Weltevreden, 1927; Eng. trans., enlarged 2/1968)
- J. Kunst:** *A Study on Papuan Music* (Weltevreden, 1931/R)
- J. Kunst:** *De toonkunst van Java* ('s-Gravenhage, 1934; Eng. trans., enlarged 3/1973)
- N.J. Lan:** 'Chinese Songs and Plays in Batavia', *China Journal*, xxiii/4 (1935), 198
- H. Fisher:** *Schallgeräte in Ozeanien* (Strasbourg and Baden-Baden, 1958)
- P. Collaer:** *Ozeanien*, Musikgeschichte in Bildern, i/1 (Leipzig, 1965)
- J. Maceda:** 'Classification and Distribution of Musical Instruments in the Philippines', *The Musics of Asia: Manila 1966*, 24–37 [summary in *EthM*, xi (1967), 107–13]
- K.A. Gourlay:** *A Bibliography of Traditional Music in Papua New Guinea* (Port Moresby, 1974)
- E.A. Manuel:** 'Toward an Inventory of Philippine Musical Instruments', *Asian Studies*, xiv (1976), 1–72
- M. McLean:** *An Annotated Bibliography of Oceanic Music and Dance* (Wellington, 1977, 2/1995)
- W. Chen:** *Qing shi yue zhi zhi yanjiu* [Studies on the music section of the Qing history] (Taipei, 1978)
- P. Collaer:** *Südostasien*, Musikgeschichte in Bildern, i/3 (Leipzig, 1979)

**E.M. Frame:** 'The Musical Instruments of Sabah, Malaysia', *EthM*, xxvi (1982), 247–74

**M. Tenzer:** *Balinese Music* (Singapore, 1991)

### latin america

**V. Chenoweth:** *The Marimbas of Guatemala* (Lexington, KY, 1964)

**L. O'Brien:** 'Marimbas of Guatemala: the African Connection', *World of Music*, xxiv/2 (1982), 99–104

**R. Garfias:** 'The Marimba of Mexico and Central America', *LAMR*, iv (1983), 203–32

**L. Kaptain:** *Maderas que cantan* (Tuxtla Gutiérrez, 1991)

**J.B. Camposeco Mateo:** *Te' son, chiab' o k'ojom: la marimba de Guatemala* (Guatemala City, 2/1994)

## Xylorimba [xylo-marimba, marimba-xylophone].

Name given to an instrument of the [Xylophone](#) family with a compass sufficiently large to embrace the low-sounding bars of the [Marimba](#) and the highest-sounding bars of the xylophone (it is classified as an idiophone: set of percussion plaques). The normal compass of the xylorimba is five octaves: C to c<sup>'''</sup>. As the marimba-xylophone it was a popular instrument in the 1920s and 30s, particularly in vaudeville. The lower notes of the xylorimba sound more like a xylophone than a marimba on account of the bars being thicker and narrower than those of a modern marimba (the bars of the xylophone and the marimba are shaped differently to emphasize different overtones; see [Acoustics](#), §V, 2).

The terms have been a source of confusion. Many composers have called for 'xylorimba', including Berg (*Three Orchestral Pieces*, op.6, 1914–15), Boulez (e.g. *Le marteau sans maître*, 1953–5, rev. 1957) and Messiaen, but invariably the parts were written for a four-octave xylophone. Stravinsky's *The Flood* (1961–2) includes a part for 'marimba-xylophone', but a marimba was intended. The parts in Roberto Gerhard's *Hymnody* (1963; with two players at one instrument) were originally labelled 'xylorimba', but this was later changed to 'marimba'. Boulez wrote for two true xylorimbas (each of five octaves) in *Pli selon pli* (1957–62); the parts have sometimes been played on two xylophones and two marimbas.

JAMES BLADES/JAMES HOLLAND

## Xylosistron.

A 19th-century [Xylophone](#).

## Xyndas [Xyntas, Xinda(s), Xinta(s)], Spyridon

(*b* Corfu, 8 June 1812/14; *d* Athens, 11 Nov 1896). Greek composer and guitarist. He studied in Corfu with Mantzaros and in Naples with Zingarelli at



the Conservatorio di S Pietro a Majella (1834–7). On his return to Corfu he taught singing at the Corfu Philharmonic Society for nearly 20 years. As a virtuoso guitarist he toured extensively in Italy and around the eastern Mediterranean. He settled in Athens in about 1886 and died blind and in dire poverty. In his lifetime he was one of the most popular composers of the Ionian school founded by Mantazros. His most notable work, and the only one of his operas to survive, is *O ypopsifios vouleftis* ('The Parliamentary Candidate'), the first Greek opera to a Greek libretto. It is a fresh work revealing the dichotomy between corrupt politicians and destitute peasants on the eve of the union of the Ionian Islands with Greece (1864). Its première in Athens, by the Elliniko Melodrama company on 14 March 1888, is generally considered to represent the birth of Greek lyric theatre. The opera's realistic subject matter, unusual for comic opera, is enhanced by language rich in colourful idiomatic expressions. Some charming and unpretentious orchestral writing, suggesting the folk music of the Ionian Islands, differentiates the work from the Italian *buffo* archetype.

Most of his works were posthumously destroyed, but several of his songs are extant, and some published. They show a gift for unaffected melodic invention, some with a flavour of Ionian folk music (such as *Nani-nani*, 'Lullaby'). Others, extended and in bel canto style, are full-length arias, whose dramatic qualities give an invaluable hint not only to the nature of Xyndas's lost operas, but also to the language of other Ionian composers in the 1850s, for example Edouardos Lambelet.

## WORKS

(selective list)

### operas

Anna Winter (4, after A. Dumas père: *Les trois mousquetaires*), Corfu, S Giacomo, carn. 1855, lost; trans. by S. Callos as *I tris somatofylakes* [The Three Musketeers], Corfu, S Giacomo, ?1885, lost

Il conte Giuliano (3, Y. Markoras), Corfu, S Giacomo, carn. 1857, *GR-An*, Motsenigos archive (without vocal parts)

O ypopsifios [The Candidate] (1, N. Makris/?Xyndas), 1857, lost

O odhyrmos tou Kerkyraeou horikou [Woes of a Corfu Peasant] (1, Makris/?Xyndas, 1857, lost

O ypopsifios vouleftis [The Parliamentary Candidate] (3, I. Rinopoulos, after libs of *O ypopsifios* and *O odhyrmos tou Kerkyraeou*), Corfu, S Giacomo, Sept/Oct 1867, lib in Yennadheios Library, Athens, vs (Act 1 only) in *GR-Aleotsakos*, complete vs in private collections

Arkadion, Corfu, ?1867, lost

O neogambros [The Bridegroom] (comic op), 1877, lost

I due pretendenti, excerpts perf. Milan, 1877, lost

Galatea (5, after drama by S. Vassiliadis), ?1887–96, inc., lost

O prikothiras [The Dowry Hunter] (Gk. vaudeville, 1, after comedy by A. Nikolaras), Athens, Omonoia, 9 Aug 1890, collab. D. Rhodhios, aria Z

To filima (To filaki) [The Kiss], Athens, Tsoha, 22 Sept 1893, lost

### other works

Choral: Hymnos dhia ton en Kriti agona [Hymn for the Cretan Uprising], G, 3vv chorus, pf, c1866–7; San ti spitha krymméni stin stahti [Like a Spark among the

Ashes] (A. Koutouvalis), G, 3vv male chorus, pf, before March 1875; Xypnate Ellinopaedha [Arise, ye Sons of Greece], F, 2vv chorus, pf; Ta dhyo adhelfia [The Two Siblings] (D. Solomos), F, 2vv chorus, a cappella

Solo vocal: 12 asmata ellinika [12 Greek Songs], 1/2/3vv, pf, ?1856 (Athens, c1882); To orfano [The Organ] (A. Paraschos), 1875 (Athens, c1888–9); I athlia psychi kathimeri [The Poor Soul Sat Sighing] (D. Solomos, after W. Shakespeare: Othello, act 4, scene iii), 1v, pf (Corfu, n.d.); Glykeia nychta [Sweet Night] (P.D. Heliopoulos), C, n.d.; Nani-nani [Lullaby] (A. Valaoritis), a, in *Asty*, no.106 (27 Sept 1887); To fili [The Kiss] (G. Martinellis), C, n.d.); To mnima [The Grave], F, 1v, ?orch, lost; To oneiron [The Dream] (A. Paraschos); O patrikos tafos [Father's Grave] (Solomos), 1v, pf, str qt; Lemvodhia [Barcarolla], g (Athens, after 1896)

La Meditazione, B<sup>1</sup>: pf, c1876, MS in private collection, Corfu

Principal publishers: Zacharias Velondhios, J.G. Lupis, Georghios Filippou Nakas

## BIBLIOGRAPHY

*MGG1* (John G. Papaïoannou)

'S. Xyntas', *Asty*, no.105 (20 Sept 1887)

**D.G. Thémelis:** 'I moussiki sylloghi apo tin idhiotiki vivliothiki tov Othona tis Elladhos' [The music collection in King Otto's private library], *Ellinika*, xxxi (1979), 453–83

**T. Hadjipandazis:** *To komidhyllio* [The (Greek) Vaudeville] (Athens, 1981)

**G. Leotsakos:** 'Spyridon, Xyndas', *Pangosmio viografiko lexiko* [Universal biographical dictionary], vii (Athens, 1987), 414–15

**K. Baroutas:** *I moussiki zoi stin Athina to 19o aeona* [Musical life in Athens during the 19th century] (Athens, 1992)

**G. Leotsakos:** 'I haménes ellinikés operes, i o afanismos tou moussikou mas politismou' [The lost Greek operas, or the destruction of our musical civilization], *Epilogos '92* (Athens, 1992), 398–428

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