

蘭嶼雅美族音樂

中文摘要：

本研究著重雅美族具高度獨特性的歌唱中「音」(pitch) 的測量、分析，這是現存的研究文獻中甚少論及的一個有趣課題。

在錄音素材的取得方面，有幾個不同的來源：一部份是來自我們前往蘭嶼旅行取得的第一手錄音，一部份是先前的研究者留下的成果，還有一些是蘭嶼當地廣播電台所收集的錄音。

- 音 (pitch) . 先前的研究者多半著重在歌唱這個懸而未解的問題。在本研究中，雅美歌曲中 tritonic (三聲音階)的特性已經被確認，而且在一些歌曲中更擴展至 pentatonic (五聲音階)。另一個問題是關於音程的變化，我們發現在雅美歌曲中，重要的是音和音之間的對立或相和，而不強調精確的音準；這是一個重要的美學觀點，並且是用來評價歌者的品質和他的創作優劣的標準。(關於音、音程、分析及方法論上的採用，請見附錄。)
- 音樂結構 (Musical Structure) . 我們可以看到三聲音階（事實上是五聲）如何構成雅美音樂中基本的調性素材。它們形成了一些模式，不斷地重複，這可以幫助歌者延展出極長的篇章；這也解釋了同一首歌曲在不同的社會情境 (social context) 中被歌唱所產生的一些變化。
- 變遷 (Change). 當地變遷中的情況對音樂實踐產生影響，受台灣教育的雅美族新世代也逐漸成長，一些歌曲形式仍被演唱，但由於重要儀式場合的減少，例如：大船的下水儀式，因此與儀式相關的音樂幾乎面臨消失的命運。

外界的音樂形式對於雅美歌曲的影響非常有限，這是由於他們獨特的作曲系統只能在原本的形式中存在。即使採用五聲音階，也只能被看作是原有三聲音階體系的擴展。

另一個有趣的現象是一個雙重系統的形成，當地人們不是聽雅美歌曲（實際參與）就是聽台灣的中文流行歌曲。

The songs of the Yami of Lanyu
Computer pitch analysis in order to determine basic melodic structures
in relation to song creation in Yami chanting

Summary

This project intended to clarify an interesting aspect of the chant of the Yami that had not been dealt before with in the existing literature. That is the measurement of pitches of the highly differentiated singing of this group.

We acquired recorded material to analyze from different sources. Some was collected by us in a journey to Lanyu and some was handed to us by previous researchers in the field and some from the collection of recordings of the local radio station in Lanyu.

- Pitch. Previous researchers stumbled mainly on this aspect of singing that has remained largely unresolved. The tritonic (three note) character of the chant has been confirmed and extended to include some chant that is pentatonic (five note). Another question is the variability of the intervals. We have found that what matters in the chant is the opposition or interplay between the pitches and not necessarily their exact intonation. This is an important matter from the aesthetical point of view and serves as a criteria for evaluation of the quality of a singer and of his creation. (For a discussion of pitches, intervals, analysis and methodology used see the Annex).

- Musical Structures. We can see now how these three notes (eventually five) that constitute the basic tonal material of the Yami, function. They are organized in patterns that repeat and help the singer to deliver very long texts. This explains the variants of a song that have been found when the same chant is intoned in different ways in different social contexts.

- Change. Changing local conditions are affecting musical practices and the present generation of Yami influenced by Taiwanese education is growing. Some forms continue to be performed but as the great occasions such as the launching of the big boat launching ceremony become rarer the musical forms associated with them tend to disappear.

External musical forms in our view cannot influence very much Yami chant because of the system of composing Yami chant is quite unique and can only exist in its original form. Even the use of five notes could be seen as an extension of the tritonic system.

What we find instead is a situation in which people listen to either Yami chant (actively participating) or to songs of Chinese or Taiwanese origin prevalent in the main island of Taiwan. But the two are predisposed not to mix and evolve in different spheres.

The material collected came from various sources and this afforded us the opportunity to listen to and to examine songs from different places and collected at different times (from the 1970's to the 1990's) and so we could have a wider view of the recent changes in chanting and the repertory. Some examples were provided by previous researchers notably G. Hurworth in Australia who worked with the Yami during the 1970's. This gave us an opportunity to

investigate change in performance. Other materials were collected by us from interviews with individuals and from recordings obtained from the Radio in Lanyu.

Analysis. Because of the relative isolation of the island there have been few foreign influences. There are no instruments, only singing. The chants are non metric (no measured singing) and a great deal is in antiphonal form (call and response singing).

One interesting characteristic is that Yami chant is that is not absolutely fixed. That is a particular performance of a chant may differ from a previous one. Many of the melodies that are given as definitive they are in fact not so.; when new songs are composed they present variants. There are two elements that influence this fact; one is that though the musical forms themselves are well established, the texts may be varied according to the occasion by the performer. What remains is a basic melody that governs the performance of that particular melody. We have found that in fact there is always a polar note (the base of the recitation) that governs the chant. Other notes serve to reinforce the melodic patterns that we hear.

Change. We could not determine substantial changes in traditional chant between what was recorded in the 1970's and 1990's. The traditional singing tends to exist either in its integrity or simply disappear. Changes in the repertory is another matter; part of the repertory disappears with the changing context of social life among the Yami.

Concerning the question of an eventual influence of Chinese music (which is essentially pentatonic) on the chant of the Yami we proposed has not been completely elucidated but our findings throw some light on this new aspect. They continue to compose and sing songs at suitable occasions in accordance to the traditional system. The influence of Chinese culture can be in there way of life in the varying musical tastes and in the kind of music that they listen to in different occasions. Their acculturation does not appear to touch the musical system which either appears whole or disappears with the evolution of the context of performance. This is due undoubtedly to the different structure of the two musical systems. They are not close enough to be able to accept modification without destroying the structure. This is quite unique among the chant of other aboriginal groups in Taiwan and it is confirmed by the examination of early recordings. No difference in style is noticeable in three decades; the skill of the performer and the quality of the performance may vary but things remain stylistically compatible.

Main conclusions relevant to the project, i.e. pitch and musical analysis

- The three note system (sometimes enlarged to include five notes) is indeed the mainstay of Yami chant. The intervals are non-harmonic as Kurosawa very early saw.
- Intervals may vary within a wide range but they are kept to between 157 and 251 cents (100 cents = a min 2nd) for the upper note. This indeed a very wide range of variability. However it must be pointed out that minimal value of 157 appeared only once in our instances of analysis. Most of the chants tend to keep to an interval bigger than the major second.

The interval of the lower note tends to be slightly smaller in many chant; there are a number of exceptions to this tendency and we are unable to confirm that the lower interval is definitely smaller though this remains a stylistic feature.

- Tonal center. There is always a tonal polarity, that is a tendency for notes to cadence or find rest on a final note. This note is in most our examples the middle one but although the tonal center may be clearly determined the final note may not always be the middle one.
- Melodic structures or units of melodic contour appear to be relatively simple. There is a sustained recitation of on higher note with variations and a phrase will end in a cadence. Melodic contours are modified according to the text. Text seems here to be the most important factor in organizing form since some texts specially the so-called “self-composed” texts tend to be not very strict in their metric character, that is the number of syllables tend to vary from verse to verse.
- Finally we could say that the difficulty in understanding the way Yami chant functions can be surmounted by changing our methodological approach. Chant may not be considered haphazard (or ‘primitive’ as Kurosawa suggested) because intervals may change from performer to performer and from song to song. We should see this as different cognitive musical system: what is significant to the Yami may not be necessarily what a musicologist trained in another system of thought may expect. Then taking the metrical structure of the texts as the basis for our understanding of the forms we can see that a melodic formula is repeated every verse or sometimes every two verses. This serves to help the performer deliver the long texts of the chants. Melodically what matters is the opposition of pitches and not so much their exact intervallic value.

Brief evaluation of previous work relevant to our research and the relative impact of our findings in relation to them.0

- Kurosawa bases himself on Boethius’ classification of music into *musica mundana* (music that follows natural laws), *musica humana* (referring to vocal music) and *musica instrumentalis* (which developed later). For instance he classes Bunun music as *musica mundana* but Yami music he considers it to be *musica humana*.

He refers to the existence of only three pitches in Yami music and says that this is not harmony or at least it is not based on the harmonic series.

He proposes that the reason for the absence of harmony in Yami music may be because they are unable to hear the overtones which seems to me very unlikely. He researched the Yami in 1943 and takes Yami music as being in an early stage of development and as an example to illustrate his ‘evolutionary’ theories about music.

One must note that Kurosawa’s approach corresponded to the research paradigm of his times. In fact there is no reason to postulate the existence of harmony is one does not find it.

黒澤隆朝 Kurosawa Ryuchou リュウチョウ-1980, 〈從雅美族的音樂談「音樂起源論」〉, 《民俗曲藝》改刊1期。p.20-25。‘The rise of music in the Yami tribe’. Translation from the Japanese. The original article dates from 1978.

Although we do not agree with Kurosawa's evolutionary theory we have confirmed his general statement on the existence of three pitches not based on the harmonic series. This is an important particularity of Yami chant and may be because of the recitative character of a great part of the repertory. However our findings extend the three note system to five notes but the stylistic basis of system remains as it is.

- Hurworth, an Australian researcher who worked in Lanyu during the 1970's proposed categories based in what he says are native Yami classifications of song.
 - 1) based on intonational contours (*gamuanudana*). These are: *anuwud*, *abaririna*, *amucanuwud*, *rawud*, *vaji*, *gariag*, *amuwud no ganam*; 2) according to the age of the such as songs of 'former generations' (*amuwud no gagua*) performed as part of stories and during the boat launching ceremonies and songs sung at sea by the boat crew. These are important to us since they have no fixed form but are governed by melodic patterns (mostly tritonic). His analysis gave us clues as to the prevalent melodic structures of the chant which we found relevant to our research.

HURWORTH, Greg J. 1995 An exploratory study of the music of the Yami of Botel Tobago, Taiwan. Ph D Thesis. Victoria, OZ, Monash University, 1995.

Hurworth's remains the most complete work as regards musical analysis. His ethnography seems quite reliable but describes the situation as it obtained in the 1970's which offers material for comparison and evaluation of change. Sadly many of the forms he mentions can hardly be found today. On the other hand his musical analysis is still very useful. He has provided a wealth of transcriptions but since he did not benefit from automatic transcription of the type used in this project his results are not very accurate. However in general terms we tend to confirm his analysis in spite of the difficulty of the task he had embarked on he pointed in the right direction as regards the structure of the chant.

- Lin Shanhsu is a Yami and although he does not provide musical analysis he has provided one of the best recent studies on the music of his group. He has collected some music and feels worried about its gradual disappearance. He avows not to possess formal musical training to be able to accurately transcribe some of the songs he recorded. Nevertheless as an insider he has benefitted from his knowledge of the language and the trust of informants that a non-Yami could not easily muster.

林杉樹 Lin Shanhsu. 1998 〈海洋民族的聲音 雅美族〉 《原住民音樂世界研討會論文集》 行政院原住民委員會 'The sound of the Ocean Tribe. The Yami'. Proceedings of the conference: The Musical World of Aboriginal Peoples pp. 19-41.

In our opinion this article supersedes previous efforts by Hsu Tsanghuei (許常惠) to provide an *exhaustive* categorization of Yami songs. His study, though it does not deal with the analytical aspects of music provides nevertheless a very complete contextualization of Yami song forms. This helps us on the ethnographic aspects of many songs. If it is from the texts of these songs that a person comes to know his place in society this will explain part of the disorientation we find in a younger generation that does not sing (or has the opportunity to listen to) traditional songs. We have often consulted his classification system for comparison purposes.

- Hsu Tsanghui of whose articles there are various editions, was one of the first to propose classification categories according to the native's point of view. Some articles are polemical but were the first attempt at a scientific understanding of Yami music that went beyond mere description.

許常惠 Hsu Tsanghui. 'Modality of the categories of Yami songs'
1980, 〈從雅美族對歌謠的分類法試論雅美族音樂形態〉, 《中華民俗藝術69年刊》, 台北。
1980, 〈從雅美族對歌謠的分類法試論雅美族音樂形態〉, 《民族音樂論述稿(一)》, 樂韻, pp.53-133。
1982, 〈從雅美族對歌謠的分類法試論雅美族音樂形態〉, 《民俗曲藝》, 13。 pp. 21-37

Three different editions of the same article. The author criticizes the categorizations of Kurosawa and Lu Pinchuang and tries to find native categories of song classification. His attempts remain a historical landmark but are nowadays no longer applicable to this study.

許常惠 Hsu Tsanghuei
1988 'A brief transcription and analysis and comparative study on Mr Hsu Yinchou's 'Categorization of Yami songs'. In proceedings of 3rd Conference of Chinese Ethno-musicology, pp. 255-270. In English.

Other contributors to the field

- 周宗經 Chou Tsongchin (夏本奇伯愛雅) 1996 雅美族的古謠與文化 台北：常民文化出版社 'Yami ancient songs and culture'

The author is a Yami. He has done research on linguistics and botany but he has collected and transcribed song texts for the account of the Academia Sinica. He deals with Yami Culture and Yami ancient songs and provides song texts in Yami language with Chinese translations.

Annex

Here with expose briefly some examples that illustrate methods and results of our analysis to support our conclusions.

The sonogram and the fundamental estimation was done with AudioSculpt a software package from IRCAM, Paris, France.

Pitches are measured in Hertz and converted to midicents. Conversion done with Patchwork also a software package from IRCAM, Paris, France.

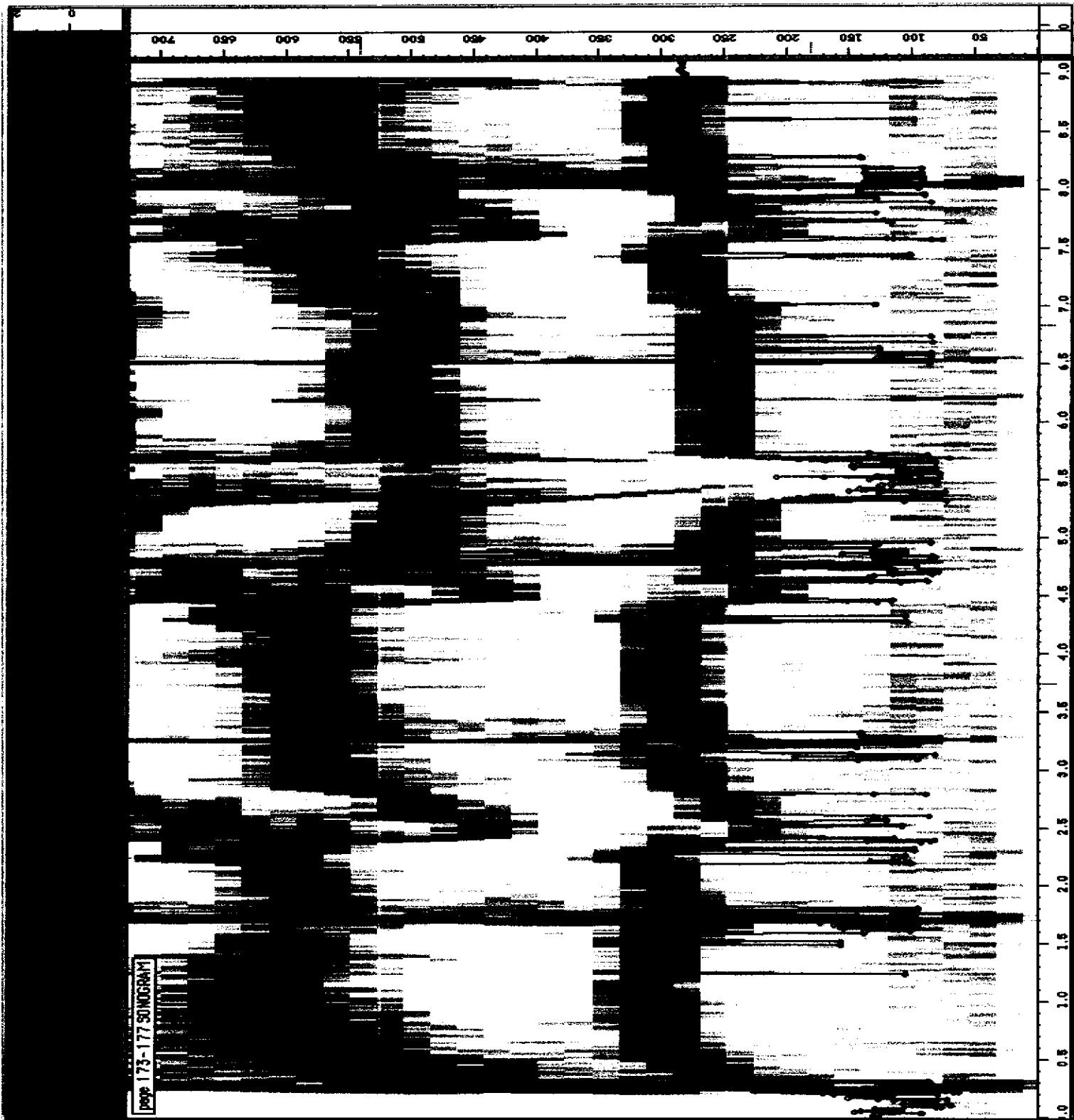
A pitch expressed in midicents (instead of being expressed in Hertz) measures the interval between that pitch and middle C to which it has been attributed the arbitrary value of 6000 cents. Thus the difference between any two pitches expressed in midicents represents in cents the size of the interval between these two pitches.

Pitch analysis example Page 173-177

Basic pitches	Hz	midicents	Intervals in cents		
UPPER	285.6	6151.5	}	251.1	approx. maj 2nd + 1/4 tone
MIDDLE	247.1	5900.4			
LOWER	220.1	5700.3			approx. maj 2nd

The initial is the upper note. The final is the middle note. Ambitus a very large 4th. The middle note clearly appears in this chant as the polar note (tonal center). Notice the non harmonic character of the pitches in question (specially the upper note) corresponding to a very high major second.

Timeline in seconds / Frequency in Hertz (converted to midicents in analysis)
The red lines mark regions of undetermined pitch



Pitch analysis example Page 162

Basic pitches	Hz	Midicents	Intervals in cents		
HIGH	251.4	5930.3	}	157 cents	approx. a short maj 2nd
MIDDLE	229.5	5773.2			
LOW	212	5636			approx. a large min 2nd

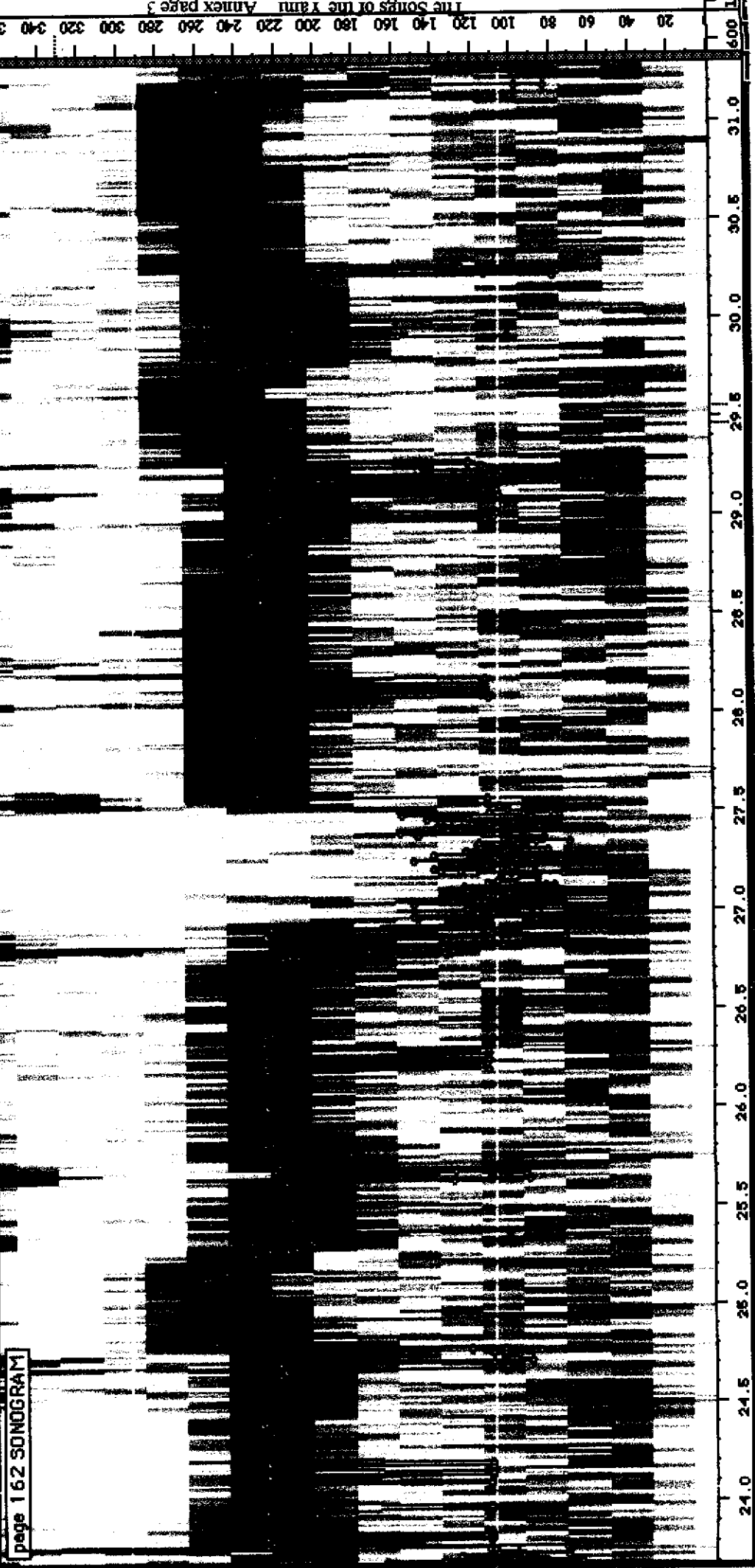
The initial note is the upper one. The final note is also the upper one. *Ambitus* a **min 3rd**

Performance features:

The repeating motive high-low-middle tends to make the middle tone the polar note: the note that feels like final. However the song uncharacteristically ends in the upper note. The lower note functions as a lower auxiliary and is never sustained.

Sonogram and Fundamental Estimation (fragment) of Example Page 162

Timeline in seconds / Frequency in Hertz (converted to midicents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



Pitch analysis Page 3

Basic pitches	Hz	Midicents	Intervals in cents		
UPPER	217.8	5681.9			
			}	218.9 ~	
MIDDLE	192.0	5463		}	464.9 ~
			}	246.0 ~	
LOW	166.5	5217			

The initial is the upper note. The final is the middle one

Performance features:

The upper note tends to be reached by an ascending glissando. It is also reached in the same fashion when briefly appears a second time.

The middle note tends to be the sustained or tenor note; the lower note again functions as a auxiliary note to help reach the tenor. Each verse ends in a descending glissando. The *ambitus* is larger than in other examples. This variability in the size of the ambitus points out to the fact that the significant feature here is opposition of pitches (an upper, a middle and a lower) and as long as that opposition remains clear the exact size of the interval is not relevant and does not affect criteria of asthetical appreciation.

Sonogram and Fundamental Estimation (fragment) of Example Page 162

Timeline in seconds / Frequency in Hertz (converted to micicents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



Pitch analysis Page 218 (based on 22-43 sec)

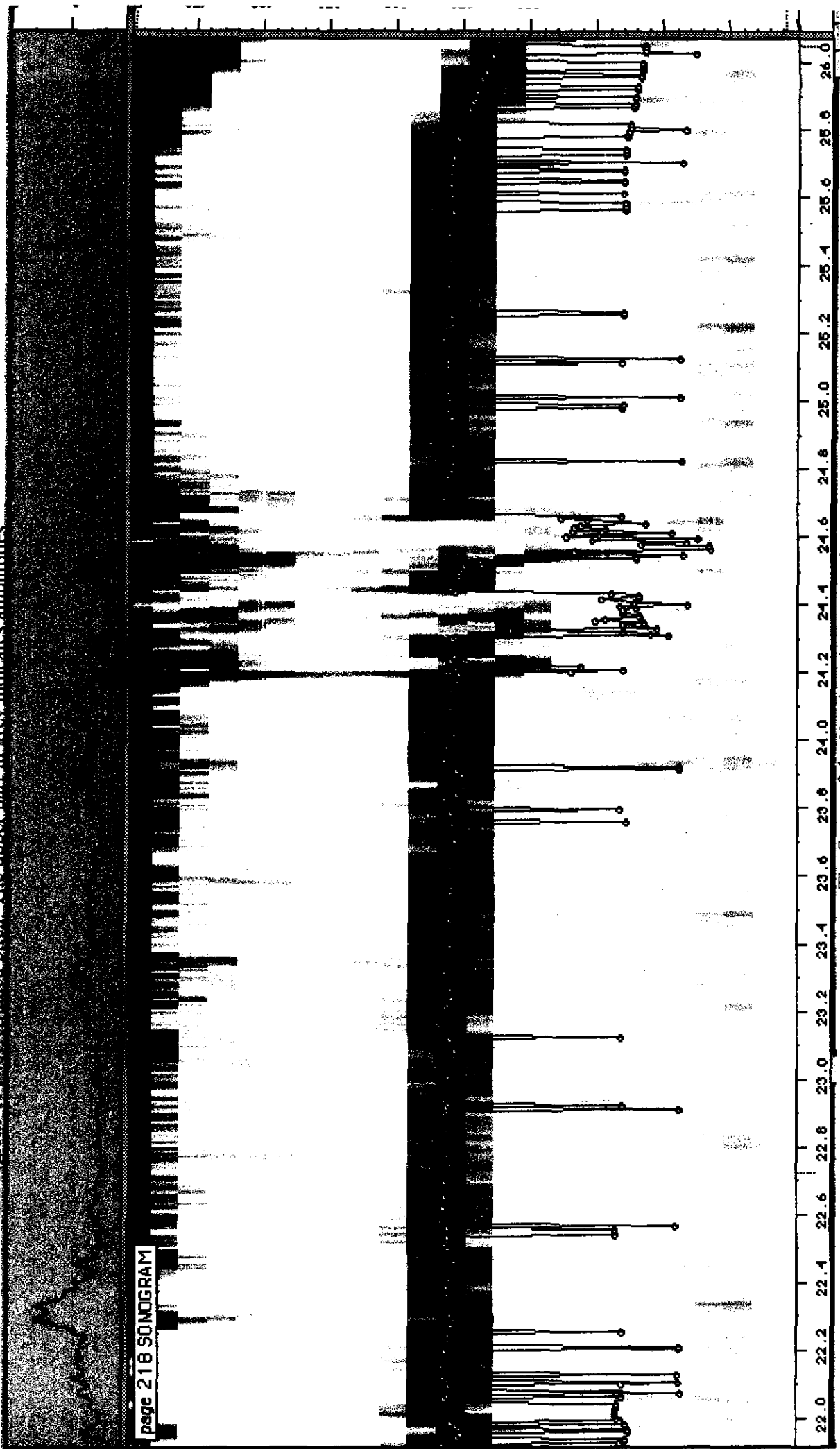
Basic pitches	Hz	Midicents	Intervals in cents		
UPPER	297.7	6223.1	}	226.7	approx. a large maj 2nd
SECOND	261.2	5996.4			
THIRD	230.0	5776.3	}	220.1	approx. a large maj 2nd
FOURTH	199.1	5526.6			
LOWER	179.9	5351.2	}	175.4	approx. a short maj 2nd

The lower pitch appears only once in the piece. It appears to be an ornament. The upper pitch appears only once but it lasts longer. This song is clearly pentatonic but in style remains definitely Yami. It is an exception to the tritonic character of most Yami songs

Sonogram and Fundamental Estimation (fragment) of Example Page 218 (1)

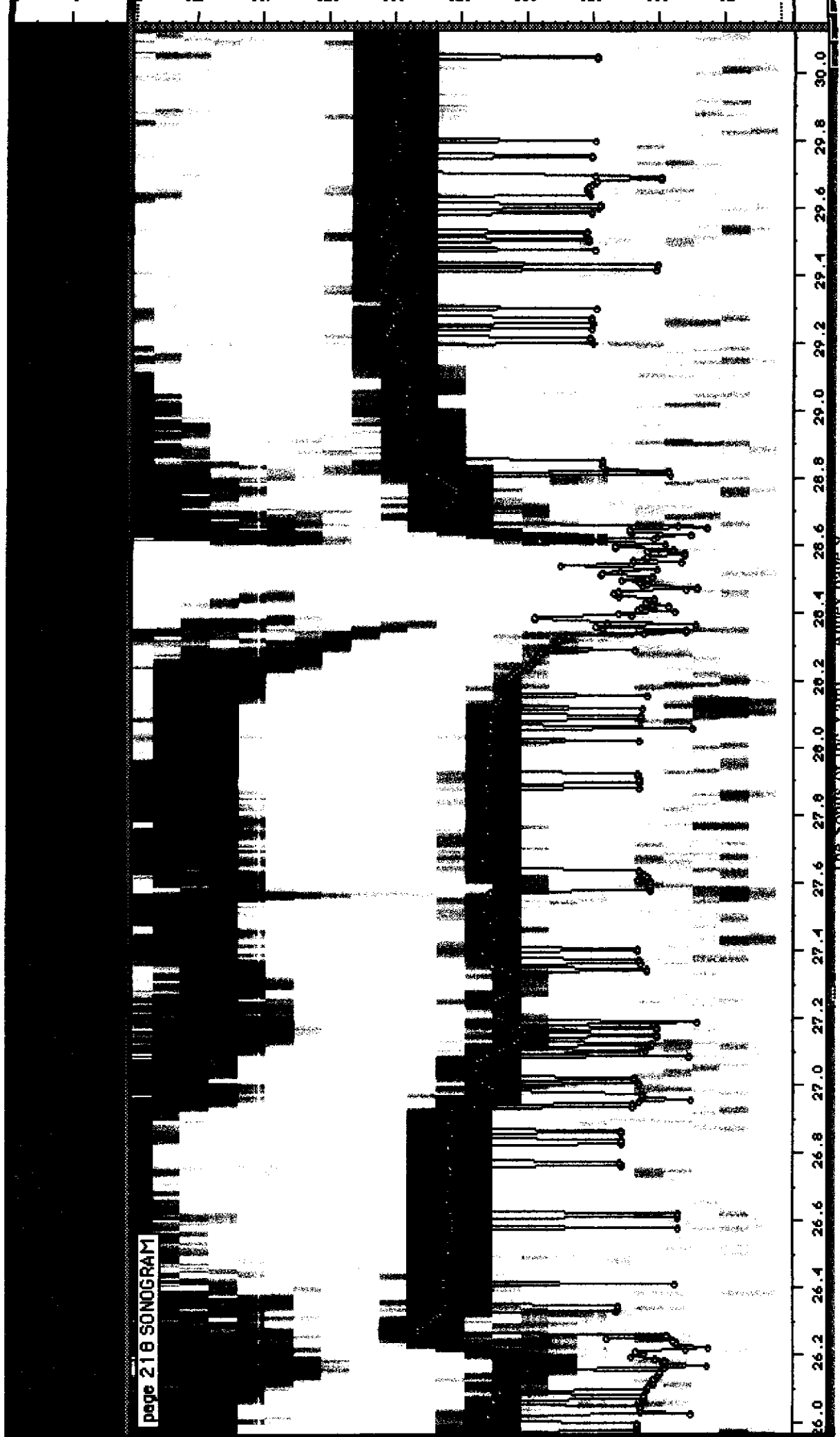
Timeline in seconds / Frequency in Hertz (converted to midcents in analysis)

The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



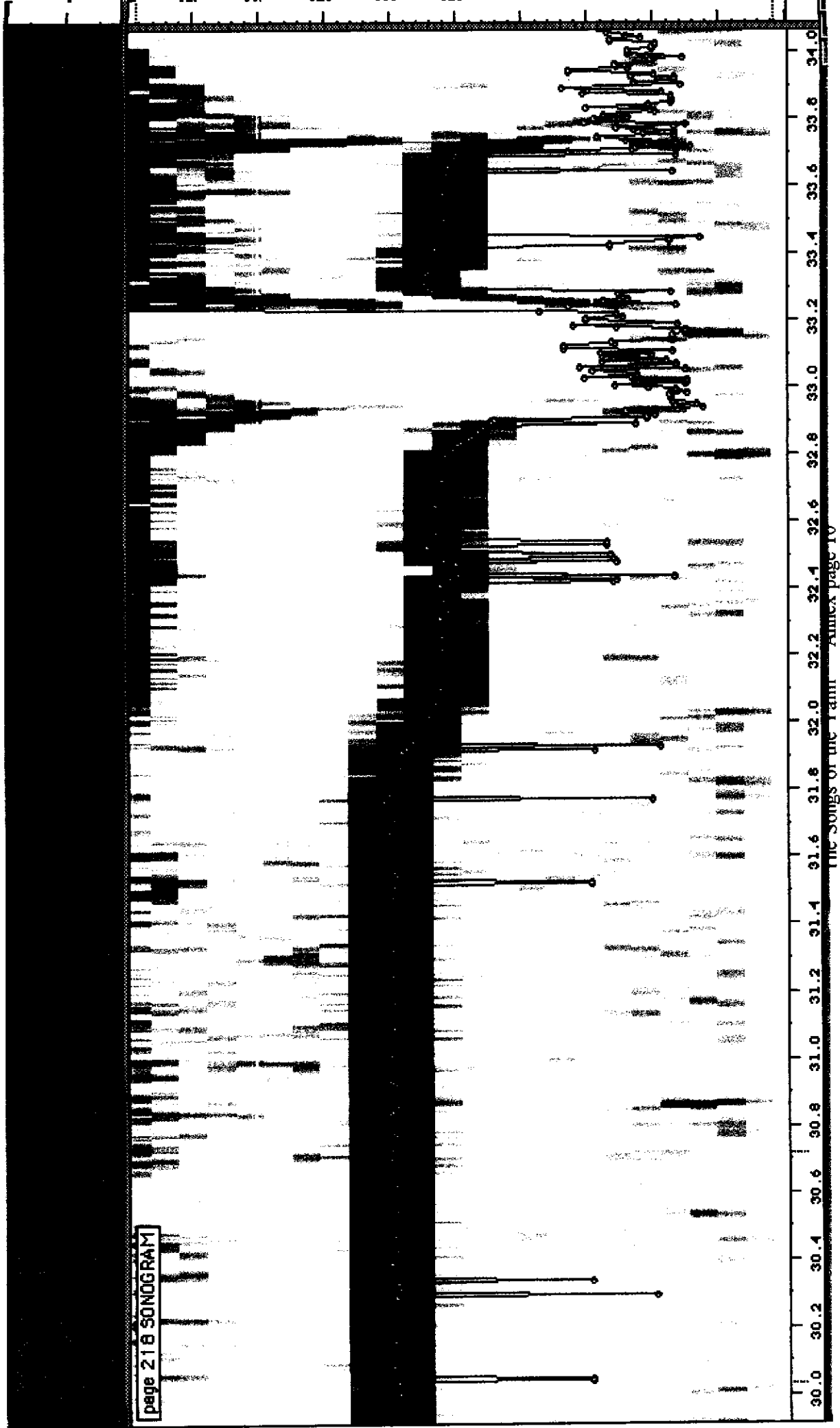
Sonogram and Fundamental Estimation (Fragment) of Example Page 218 (2)

Timeline in seconds / Frequency in Hertz (converted to midcents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



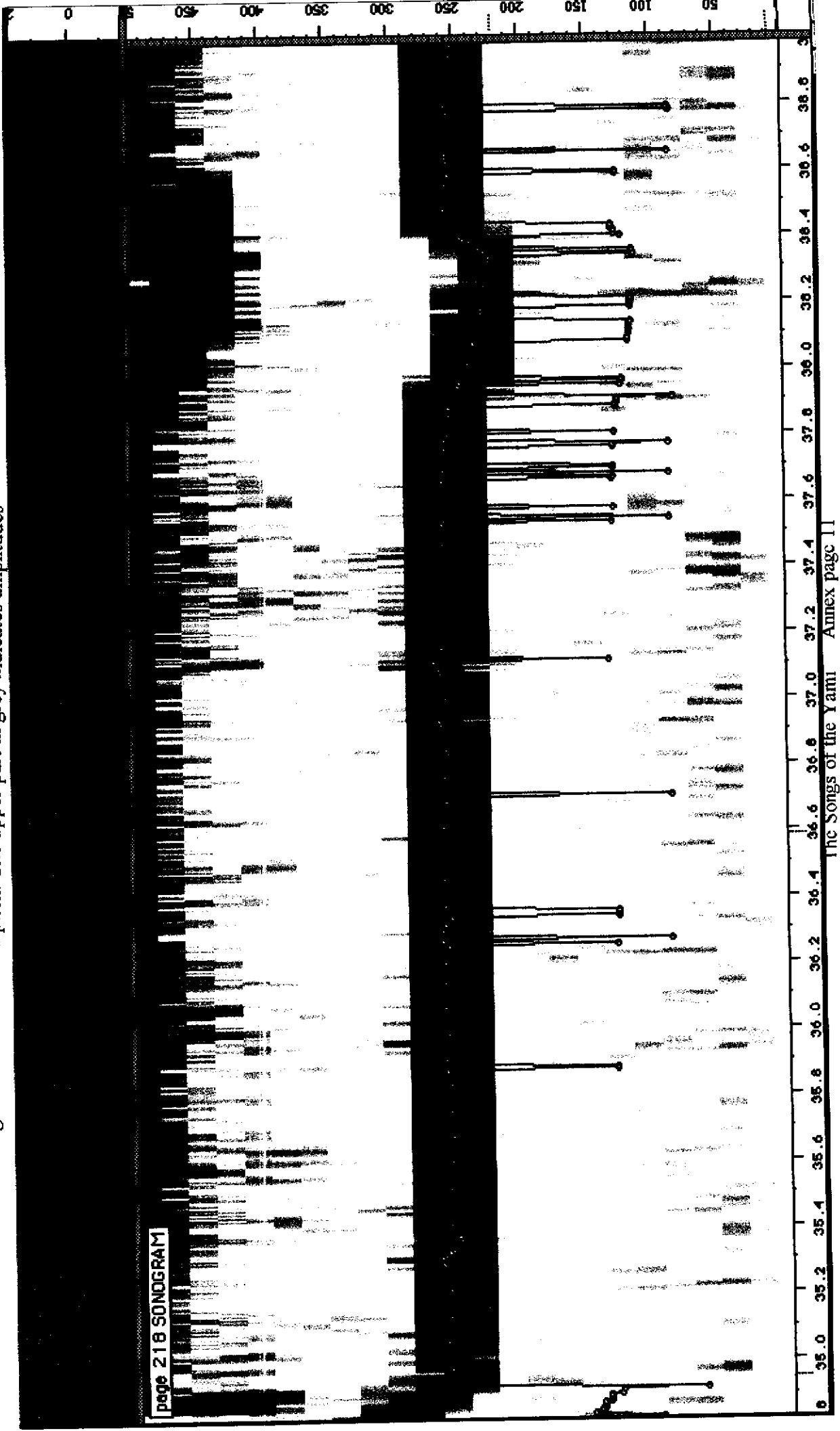
Sonogram and Fundamental Estimation (fragment) of Example Page 218 (3)

Timeline in seconds / Frequency in Hertz (converted to midicents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



Sonogram and Fundamental Estimation (fragment) of Example Page 218 (4)

Timeline in seconds / Frequency in Hertz (converted to midicents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes



Sonogram and Fundamental Estimation (fragment) of Example Page 218 (5)

Timeline in seconds / Frequency in Hertz (converted to midicents in analysis)
The red lines mark regions of undetermined pitch. The upper part in grey indicates amplitudes

page 218 SONOGRAM

