THE FLAMENCO GUITAR

DISSERTATION

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LIST OF ILLUSTRATIONS

INTRODUCTION

Flamenco as we know it today is the result of a blending of many different cultures over the last 500 years in Spain. My own interest in this music is due to having spent the best part of my childhood and adolescent years in the province of Granada, one of the seven provinces, which together form Andalusia. It was not until ten years after leaving Spain that I returned there to learn about flamenco guitar playing. Much to my surprise I discovered that it would probably take me my whole life to learn about the intricacies of this highly evolved musical style, which encompasses not only guitar playing but also dance and song. And above all it is not something that can be learned from a book; it must be lived.

After making a flamenco guitar I realised that there is very little information available at present on the historical and cultural development of the instrument, or on its construction. This spurred me to carry out the research for this dissertation and to bring together information on the roots of the flamenco art form, the flamenco guitar-playing technique, the development of the instrument within its cultural and historical contexts and the construction procedure of a flamenco guitar.

I travelled to the city of Granada in Spain to interview four guitar makers there. I found them to be very helpful and have included these interviews, transcribed and translated, in the appendix. The original recordings of these interviews are to be found on the accompanying cassette.

The first part of the dissertation deals with the art form of flamenco as a whole (this includes dance, song and guitar), the events which led up to its birth, its evolution over the nineteenth and twentieth centuries and its place in society today.

The second part is a study of the flamenco guitar-playing technique and some of the musical structures used in the music.

The third part deals with the guitar itself; its evolution from the sixteenth century *vihuela de mano* to the present day; the guitar makers who developed it into its present form, and the design and characteristics of the instrument.

The fourth part is a comparison table of the interviews I carried out with Spanish luthiers earlier this year, with the key points of the interviews shown. I recommend reading the whole interviews in the appendix as they contain a wealth of information.

At present there is very little written work on the subject to my knowledge. The book *Guitar Cultures'* touches superficially on guitar making culture in Spain today; the Spanish luthier who is mentioned in that book I also had the pleasure to interview[2]. The article *Andalusia and the Modern guitar*[3] throws some light on the matter of distinguishing between the flamenco and classical guitar but is somewhat limited in its historical scope. *The Flamenco Guitar*[4] gives a colourful and poetic view of the instrument within its cultural context at the time when it was written in 1969, but little research into its history.

I feel the information contained in the following pages will prove useful to anyone wishing to make or learn to play the flamenco guitar or to learn about flamenco art. I hope that by

'Dawe, 2001, p. 74.
Appendix 1, interview 2.
[3]Brune, 1990, pp. 10-14. [4]
George, 1969.

presenting the instrument in this broad historical and cultural context it can be understood better, and make way for further research on the subject.

THE HISTORY OF FLAMENCO

ORIGINS

The direct origins of flamenco as we know it today come from the melting pot of cultures to be found in Spain in the fifteenth and sixteenth centuries. Going back further into the past I have found reference to 'the Girls from Gades' (presently known as *Cadiz)* who around the time of Christ entertained the Romans by singing and dancing at big orgies, feasts and parties in imperial Rome. It is noted in many historical documents that they played cymbals and castanets, the latter still being used today in female flamenco dances.[5] Christian armies began reconquering the Iberian Peninsula from the North and by 1492 the last remaining Muslim kingdom of Granada in Southern Spain was handed back to Christian monarchs. There followed an intense persecution of all non-Christians; those who wished to remain were forced to convert to Christianity or murdered.

I have not yet spoken of the Gypsies, that race of travelling people who are believed to have left the Indus valley around 1000 A.D. and spread throughout the world. Some entered Spain via North Africa (Gypsy=Egyptian; in Spanish, *Gitano = Egiptano)* whilst others entered Spain with the Christian armies, from the North, offering their services as blacksmiths. Christians did not like their nomadic existence and use of witchcraft, dance and song and once Spain was reconquered, steps were taken to force the Gypsies to settle or face imprisonment. Gypsy districts *(gitanerias)* sprang up on the outskirts of many Andalusian cities and towns. Many of these are still there to this day, e.g. Triana in Seville, Sacromonte in Granada and Santiago in Jerez.

The Gypsy districts became a refuge for beggars, thieves, anyone living outside the law and often the persecuted Moors and Jews, some of whom continued to practice their religions in secret. It was under these conditions that flamenco came about, the singing of emotional turmoil and persecution *(Cante Jondo* or deep song).

Many of these old songs were made up of fragments of even older ballads. Three or four lines would be taken and made into a song known as a Copla. By the 1770s this style of singing was associated with the Gypsies. Aristocracy often *encouraged juergas,* parties where song, dance, women and wine would flow for their entertainment.

EARLY FLAMENCO

The earliest forms of Gypsy song are known as the *Tond,* the *Cana* and the *Polo. Tonds* included forms such as the *Martinete* (sung by blacksmiths, *martillo* - hammer), *Carcelera* (songs of imprisonment, carcel =prison) and the *Debla (debla* in Sanskrit means "bright sky").

During the eighteenth and into the nineteenth centuries other song forms developed throughout Andalusia, such as the *Siguiriya* (which derived from the *Seguidilla,* an older form of folksong) and the *Soled* (from the word *soledad* which means solitude). Both these forms are thought of as the backbone of flamenco today.

'Quinones, 2001, p. 18.

The nineteenth century was the golden age of flamenco when it became more popular; Andalusian folk songs were integrated into the form, which created styles such as the *Malaguenas* (songs from Malaga). These folk styles were more upbeat and did not have the depth of emotion that the older styles had. From the middle of the nineteenth century the famous *cafes cantantes* (singing cafes) appeared all over Andalusia and as far afield as Madrid and Barcelona. Flamenco dancers and musicians started turning professional and this meant a change in performance standards; it was around this time that the guitar started to be used more and more, at first purely as an accompaniment to the song but later on developed by virtuosos such as Paco Lucena (1855-?) who integrated elements of classical guitar playing into flamenco, having first mastered both styles. Javier Molina and Ramon Montoya also did much to expand the repertoire in those early days, the instrument now being used to accompany songs but more and more able to hold its own when it came to solo slots in the performance.

Fig. 1:

The dance also began to develop alongside the song and the guitar around this time (1850 - 1900) due to the aforementioned popularity of the *cafes cantantes.* Before this time the dance was restricted to mainly Gypsy artists and the technique was far less developed, often concentrating on the movement of the hands and arms, with little or no footwork. This lack of footwork comes from Muslim tradition where women were not allowed to show their feet; all this started to change from the middle of the nineteenth century, especially with male dancers who introduced complex footwork which was later adopted by female dancers. Unlike other dance styles, flamenco dancers often perform well into their old age.

At times it seemed that flamenco started to slip into mediocrity. The *cafes cantantes* died out at the start of the twentieth century and flamenco was introduced to the theatre thereby loosing its roots as an art form and turning into something rehearsed and choreographed. Fortunately around 1950 there was a revival in traditional styles and a reawakening of old talent; in this way young singers were inspired once more by the older generations and the deep traditional styles were not lost.

The *tablao flamenco* became popular in the twentieth century and still is to this day. These are taverns with a stage where flamenco is performed for the masses. This is not however the true essence of flamenco but a somewhat diluted and rehearsed version. True flamenco can still be found in places such as the Gypsy caves of Sacromonte (Granada) and other places in Andalusia where it is performed spontaneously and not for profit. This is where its integrity can be found, in the true outpouring of feeling and expression of the inner self.

FLAMENCO IN THE TWENTY FIRST CENTURY

The art continues to evolve and thus can be heard in the many fusions with other types of music in recent years. Jazz, Indian, Turkish, Pop, Rock, North African music as well as many others have all been combined with flamenco.

Purists continue to keep the roots alive so at present at least the old flamenco styles survive. It is a vibrant living thing that is constantly changing. Interest in this music has spread worldwide; an example of this is in Japan where there are over 200 flamenco schools.

As far as instruments go the guitar remains the main one but in recent years the use of the *cajon* (big box) has become widespread. This is a percussive box made from wood, which the player sits on and plays the front, which is the soundboard, with both hands. Guitar strings pulled tight across the back of the soundboard vibrate against it when it is struck, creating a sound similar to a shaker filled with sand.

II

PLAYING THE FLAMENCO GUITAR

TECHNIQUES

The playing style makes use of many right hand techniques, more so than any other style to my knowledge. No plectrum is ever used, only the fingernails. The right hand thumb is very active and is not confined to the bass strings, often playing fast melodic passages using both down and up strokes, a technique known as *alzapua* (raise-thumb). The other four fingers are very active and as with the thumb they can play all six strings and are not confined to the trebles. As explained to me by a flamenco player "it's like having five plectrums on one hand".
Alternating first and second fingers often make fast passages as if "walking" up and down the strings. The third finger is brought into use with the beautiful technique *of tremolo.* In this technique the fingers pluck the strings in the following order: l-3-2-l-thumb-l-3-2-l-thumb etc., the thumb playing melody on all six strings whilst the fingers play tremolo on the first and second strings. This technique of tremolo is also used in classical music although it is not quite the same: thumb-3-2-l-thumb-3-2-l is the order used, producing a slightly different musical effect.

The fingers can effectuate the following pattern on extremely fast melodic passages: 1-3-2-1-3-2-3-1-3-2-1-3-1-2-3 etc.

The fourth finger is also used in the strumming *rasgueo* whereby the fingers are flicked out from the thumb one by one to produce a sharp percussive effect. Here are some *rasgueo* patterns:

Fingers flicked out from the thumb in a 4-3-2-1 pattern.

Fingers flicked out from the thumb in a 3-2-1 pattern.

The first finger may strum up the strings at the end of these strokes and depending upon the rhythm and desired effect either one or many of these cycles may be played, the latter creating a machine gun effect. Another very important *rasgueo* is as follows:
Thumb up all strings -second finger down - thumb down.
This may also and often is repeated producing the machine gun effect. Many other right hand techniques abound in flamenco as well.

As for the left hand, a good posture is essential and is basically the same as for classical guitar playing.

The left hand thumb is never used to fret a note whilst the four fingers are used extensively and often with huge stretches.

Unlike classical guitar players, flamenco players tend to rest the guitar's waist on their right leg whilst sitting cross-legged. The right arm rests at the elbow on the guitar body in order to present the right hand perpendicular to the strings between the sound hole and the bridge. Whilst playing, the right hand thumb often rests on the fifth or sixth strings.

A capo is often used; hence the same chordal and melodic patterns are used, with the capo being positioned according to the pitch of the singer's voice.

RHYTHM AND KEY

Many different forms of rhythm are used in flamenco depending on *thepalo* (style) being performed. Also the tempo can vary within the same song depending on the emotion of the leading artist (singer, dancer or guitarist).

The beat is often kept by the *palmas* (clapping) of the performer and / or audience. The guitarist always keeps the *compos* (rhythm) by striking the guitar soundboard with right hand fingers (for this reason flamenco guitars always have a scratch plate or *golpeador.* Compound rhythms are often fond in flamenco, for example in *thepalo ofBulerias* the *compds* is as follows:

1 2 3 4 5 6 7 9 10 11 12

or:

1 2 3 4 5 6 7 8 9 10 11 12

(A = Accent on beat)

This makes for interesting musicianship! Here are some examples of flamenco styles and the rhythm and key they are usually played in:

PALO	*COMPAS*	*KEY*
Soled	Compound 12/8	Phrygian E mode
Bambera	If 11	it ti ii
Cana	it ft	ii ii ii
Polo	N 11	H ii n
Soled par Buleria	II II	Phrygian A mode
Alegrias	Compound 12/8	A Major - A Minor Or E major - E minor Or C major - C minor
Bulerias	II II	Phrygian E mode Or E major - E minor Or Phrygian A mode Or A major - A minor
Siguiriya	3/4-6/8 alternating	Phrygian A mode Or A major
Tangos	4/4	Phrygian A mode
Tientos	4/4	Phrygian A mode
Rumbas	4/4	Any key
Fandangos de Huelva	3/4	Phrygian E mode
Sevillanas	3/4	Any key

Please note that the key relates to the chord shapes used and may be varied according to the pitch of the singer's voice by the use of a capo. Many different *pahs* or styles exist throughout Andalusia (over 100 have been counted). The above are the most popular today.

III

THE FLAMENCO GUITAR AND ITS HISTORY

Flamenco guitars are similar instruments to classical guitars in their construction, however their sound differs considerably. Nowadays they are nylon strung but in the nineteenth century they were gut strung. In order to fully understand how they came about we shall take a journey through time to see exactly how and why the flamenco guitar came to be.

THE MIDDLE AGES

The *vihuela* was a Spanish instrument from the sixteenth and seventeenth centuries, and although widespread at the time, only two examples have survived to this day, one in the Jacquemart-Andre Museum in Paris, France and the other in the other in the Church of the Company of Jesus in Quito, Ecuador, the latter being a relic which belonged to Saint Mariana de Jesus who lived between 1618 and 1645.[6]

Research by Ian Woodfield[7] has shown that the *vihuela de mono* (hand vihuela) appeared in the kingdom of Aragon (now a Spanish province) around the middle of the fifteenth century, and is distinct from the *vihuela de arco* (bowed vihuela) because of its curved rather than angular waist. Up until this time there is thought to be no distinction between the bowed and the plucked vihuela.

Evidence is also found of this instrument being played in parts of Italy under the control of Aragon, particularly Sardinia, at the end of the fifteenth century, and in the newly discovered territories of Central and South America at the start of the sixteenth century.

Fig. 2:

The two remaining examples of vihuela have string lengths *of 121* and 798mm respectively, much longer than the scale lengths used today on guitars. The waist of the Vihuela is far less accentuated than that of the modern guitar, the bridge very close to the end of the instrument (towards the bottom of the lower bout), to which were tied 6 double courses of gut strings.

[6] The Metropolitan Museum of Art, 1991, p. 37.
[7] The Metropolitan Museum of Art, 1991, p. 38.

Other documentary evidence shows that vihuelas often had more than one rose, often 4 or 5 of them placed symmetrically around the soundboard. They were flat backed instruments and, as with early guitars, had no separate fingerboard, this being made from the top surface of the neck, which was often highly decorated, and flush with the soundboard. The frets were tied on and made of gut. The tuning was thought to be the same as that of the lute.

THE EARLY GUITAR

The earliest surviving document in which the word *guitarra* appears dates from around 1236 in a Spanish poem of the time.[8] However, similar sounding words are found to be used throughout history to refer to stringed instruments: the Greek *kithara* and the Roman *cithara* are but two examples. The instruments which they describe are not however very similar to the guitar which we know today. Thus we can see that derivatives of the word *guitar* have been used since times immemorial to describe different stringed instruments.

Around the time when the vihuela was widely used, the term *guitarra* referred to a small round back instrument similar to a lute but smaller in size, the neck not being distinct from the body but rather flowing into it in a pear shape and with three or four courses of strings.[9] Indeed this is more akin to what we know today as the mandolin, although there is some dispute as to whether or not the *guitarra* of the middle ages is its predecessor.

From the middle of the sixteenth century we can find evidence that shows that the term guitarra was being used in the Iberian Peninsula to describe an instrument with a figure of eight shape, intimately related to the vihuela but of smaller size and fewer courses of strings. It was often strummed rather than plucked, and as it spread in subsequent years throughout Europe it became known as the Spanish Guitar.

THE SIXTEENTH CENTURY

In this period the guitar had seven strings played in four groups, the first one being single and the rest double courses and was similar to the vihuela but smaller. No examples have survived to this day and so we can only rely on iconographic data and descriptions by Renaissance musical theorists. There is however one instrument that at present has five courses of strings but which probably had four courses originally and was modified; this rare example survives in the Royal College of Music (Donaldson collection, 171). Its string length is 55.4 cm and its total length is 76.5cm. It has a slightly convex back, very narrow ribs and was made by Belchior Diaz in Lisbon in 1581.

The sixteenth century guitar repertoire was similar to that of the lute and the vihuela: fantasias, dance pieces, and works for secular and other music to accompany the voice. By the end of the sixteenth century the guitar was probably the most popular instrument in Spain.

THE SEVENTEENTH AND EIGHTEENTH CENTURIES

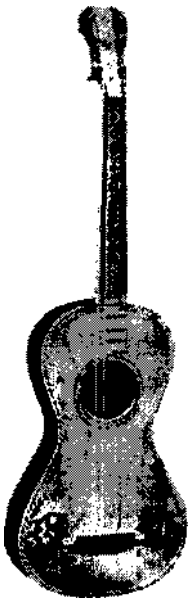
course instruments. By the seventeenth century the guitar had undergone a radical alteration and had grown in size. The fifth course of strings was the norm by this time. These five course guitars existed until the end of the eighteenth century. They arose in Spain, where the

[8] The Metropolitan Museum of Art, 1991, p. 55.
[9] The Metropolitan Museum of Art, p. 57.

strummed guitar style or *estilo rasgueado* had taken over the streets and by about 1640 had found its way into the Royal Palace.

Around this time in Italy there began a development of a new style of music and of playing that combined both strummed and plucked styles. This was brought about by the Italian Giovanni Paolo Foscarini who also played the theorbo and the lute.

Fig. 3:



Almost all guitarists preferred the a-d-g-b-e tuning although other tunings were used as well during this time, including re-entrant tunings, especially in Rome.

The guitar started to spread throughout other European countries as it became more and more popular during this time. It was also widespread throughout the Spanish colonies in Central and South America where to this day many instruments are made with characteristics of the old Baroque era instruments.

In general the five-course guitar had a single top string with four other double courses, no bracing under the soundboard and no separate fingerboard.

Around the middle of the eighteenth century an extra course of strings started to be used, which brought about an increase in body size in what can be seen to have been a search for increased sonority.

Towards the end of the 1700s some rudimentary bracing started to be used on the guitar's soundboard, usually some sort of fan pattern. The 6 single string guitar came about around this time and also the use of metallic frets instead of gut ones.

THE NINETEENTH CENTURY TO THE PRESENT DAY

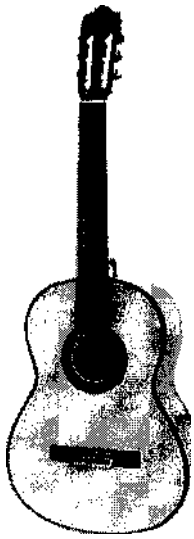
During this period the Romantic era flourished and as was common at this time there was a distinction between popular and "learned" culture. The guitar reflected this. As the great

Spanish guitar makers developed the instrument in the 1800s they would make top quality instruments for classical or concert musicians but also cheaper instruments for the masses. These guitars differed from their classical counterparts and there were a variety of types for popular music. The types used to play the popular music of Andalusia were the forerunners of the flamenco guitar of today. Amongst these were the *Bacalds Malaguenas*[10] and the *Guitarros* from Murcia". These cheaper models would be made from locally grown woods and often the size of the guitar would depend on the size of the wood available at the time!

So it came to pass that cheap guitars ended up in the hands of flamenco players (most of them could not afford expensive instruments). Tuning pegs would be used instead of machine heads and cypress wood often used for the construction of the body's backs and sides. As the guitar continued to evolve through the twentieth-century, luthiers in Madrid developed the ideas of the great nineteenth-century Andalusian luthier Antonio Torres so that the instrument may be heard in theatres and in noisy flamenco *tablaos* over many people singing, dancing and clapping.

As the twentieth century luthiers continued to evolve the folk guitar to suit the players needs, the small guitar design of the nineteenth century gradually adopted characteristics of the classical guitar as the flamenco players began to absorb elements of classical playing into their technique.

Fig. 4:



The weight of the flamenco guitar remains far less than that of the classical, as was the same with the small nineteenth century Andalusian folk guitars. This has the effect of making it respond more like a drum, the sharp percussive notes needed for flamenco playing having a fast initial attack and little sustain thereafter, and a more piercing, metallic sound. This suits the playing style of flamenco.

To this day flamenco guitars are still mainly made from cypress wood although some are made from rosewood as well, these are called *guitarras flamencas negras* or black guitars, but always to the above-mentioned specifications; a lower playing action of the strings facilitates fast passages in solos (known *asfalsetas).*

[10] Appendix 1.
" The Metropolitan Museum of Art, 1991, p. 90.

EARLY MAKERS OF THE FLAMENCO GUITAR

In the first half of the nineteenth century, famous documented guitar makers include Jose Pernas, Agustin Caro and Domingo Molina from Granada; the Lorca , Olmo and Guerra families from Malaga; Jose Recio from Cadiz; Manuel Narciso Gonzalez and the Campos family from Madrid; Silvestre Senchordi, Salvador Pau and the Reigs family from Madrid; and the famous Antonio Torres Jurado from Almeria.[12]

Antonio de Torres (1817 - 1892) played a big part in evolving the gut-strung guitar into its present form. Torres was bom in Nijar, Almeria and made guitars both in Almeria and Seville throughout his life. He increased the guitar's size and developed the fan-bracing pattern of the underside of the soundboard that is still in use today. He understood that the soundboard was of paramount importance in the production of the sound of the instrument.

Torres did not make guitars specifically for flamenco. He made guitars according to the pocket of his clients, i.e. his wealthier customers would be able to afford more expensive materials such as rosewood whilst the majority of his customers would have to make do with cheaper, locally grown woods such as cypress wood.

Of course Torres did not exist in a vacuum and his contemporaries were also developing some ideas as well. Indeed some of the ideas that Torres developed were already evident in the work of luthiers such as Francisco Sanguine, Juan
Pages, Manuel Gutierrez of Seville and Antonio Jimenez de Soto of Vera. It has been said that Torres himself learnt the trade from Jose Pernas of Granada but there is some dispute as to whether this is true or not.

After Torres, Spanish guitar makers of the Andalusian and Madrid schools followed his designs.

Curiously it was the luthiers from Madrid who developed the flamenco guitar into its present day form. The makers that this is attributed to are Jose Ramirez II, Manuel Ramirez and his apprentices Domingo Esteso, Modesto Borreguero and Santos Hernandez. These luthiers worked in the first half of the twentieth century.
The first guitar maker's catalogue that distinguished between flamenco and classical guitars was that of Manuel Ramirez in 1911[13]. Certainly by 1930 if not earlier, the flamenco guitar was fully defined and has hardly changed since.

THE FLAMENCO GUITAR DESIGN

In the nineteenth century materials for guitar making were relatively more expensive than they are today. Wealthier folk could maybe afford guitars made from the finest woods such as rosewood whilst poorer people had to make do with cheaper materials at a more affordable price. Cypress wood is a native Spanish wood and so was more readily available, hence the cheaper guitars tended to be made from it (I refer to the back and sides of the instrument). In the beginning it was this reason that cypress guitars were the ones that ended up being played at small gatherings. Basically flamenco musicians tended to be poor. It was not so much the consideration of what kind of sound the cypress wood imparted on the instrument so much as what was more affordable. Hence we can see how the flamenco sound was moulded by the local materials that were available.

[12] The Metropolitan Museum of Art, 1991, p 88
[13]Urlik, S. 1997, p 30

It was not until the early twentieth century that the flamenco guitar that we know today started to be developed. It was in Madrid where this happened; makers such as Manuel Ramirez, Domingo Esteso, Santos Hernandez and Marcelo Barbero developed light instruments, especially where the soundboard is concerned. The strutting on the soundboard is very light compared to that of a classical guitar. The use of a very stiff, light soundboard is needed to achieve the very fast attack, which is so characteristic of the flamenco sound and playing technique.

The size of the guitar body gradually increased over time in the search for more volume. This was always at the cost of tone quality, one of the fine balances that all luthiers are faced with. The string action over the fret board is also decidedly lower than that of a classical instrument. Typical measurements between the strings and the twelfth fret are three mm. at the bass and two mm. at the treble side. I have been told in Spain to take a one hundred peseta coin as a feeler gauge to measure this! The coin should just fit under the strings at the twelfth fret. This low string action can cause some buzzing on the frets and is part of the flamenco sound. The low action facilitates the very fast passages played in flamenco, and the sustained intensity of playing over a few hours in a flamenco show.

The bridge height is low as well, with around eight mm. between the soundboard and the top of the bridge saddle. This is often checked by inserting a cigarette between the strings and the soundboard.. .it should be a snug fit! The reason for the low bridge is because one of the *golpe* techniques requires the soundboard to be struck above the bass string on the down-stroke whilst simultaneously hitting the strings, all with the first finger. A low bridge facilitates this.

The use of wooden pegs instead of machine heads was commonplace at the beginning because of the cost factor. Nowadays there is a resurge in interest in pegs because they are said to impart a more flamenco sound to the instrument, however most flamenco guitars are fitted with machine heads.

The material for the soundboards is usually Spruce, although occasionally Western Red Cedar is seen to be used.

COMPARISON BETWEEN 11 FLAMENCO GUITARS

In order to form an idea of how much the flamenco guitar has changed over the twentieth century, I have laid out a comparison of the measurements of 11 flamenco guitars in the following table[14].

This is a useful reference table for anyone making a flamenco guitar as it gives an idea of the general parameters of the instrument's measurements.

As can be seen from this data, the flamenco guitar has changed very little over the past 80 years. The only guitars that differ somewhat are the first example made in 1889 by Manuel Ramirez[15]; this is an extremely small guitar with a very thin body, and was probably the type of instrument he advertised as the *guitarra de tablao.* This type of instrument may be an example of the small guitar that was used to play flamenco in the nineteenth century. The other guitar that is somewhat smaller is the one made in 1954 by Jose Ramirez II, which seems to be a scaled-down version of a regular sized flamenco guitar, for reasons unknown.

[14] Urlik, S., 1997
[15] The Metropolitan Museum of Art, 1991, p, 164

Maker and year	Manuel Ramirez, 1889	Manuel Ramirez, 1913	Domingo Esteso, 1922	Santos Hernandez, 1930	Modesto Borreguero, 1923	Miguel Rodriguez, 1929	Marcelo Barbero, 1948	Jose Ramirez II, 1954	Jose Ramirez 111,1962	Paulino Bemabe, 1971	Manuel Reyes, 1988
Upper bout width	145	271	277	275	282	280	275	236	275	370	284
Lower bout width	199	360	367	365	367	370	364	325	367	370	375
Width of waist	126	230	239	235	240	234	234	200	236	244	248
Length of body	276	484	485	480	487	490	486	462	490	490	487
Body depth at top	41	87	90	91	95	91	90	75	93	94	93
Body depth at waist	42	89	93	94	96	94	92	80	97	99	96
Body depth at bottom	43	93	89	96	100	95	97	80	100	101	98
Head length	80	160	165	174	165	170	170	150	176	180	180
Max head width	41	70	72	72	70	77	73	70	73	72	71
Nut width	32	50	50	50	49	50	51	47	51.5	53	53
12"' fret width	35	60	59	59.5	58	59	59	56	61	63	63.5
Top of body to top of sound hole distance	63	105	107	114	105	105	105	97	104	108	107
Sound hole diameter	53	86	85	85	87	89	85	84	83	84	88
Bottom of body to bottom of bridge	71	128	138	131	140	139	132	125	135	133	132
Distance between nut and saddle	374	660	652	655	650	650	660	620	655	660	653
Distance between low and highE strings at saddle		55.5	56	58	58.5	57.5	55.5	55.5	57	57.5	58
Depth of neck and fingerboard at 1st fret	-	21	21	23	24	23.5	24	21.5	22	22	21.5
Depth of neck and fingerboard at 9th fret	-	24	24.5	7S	74	76	7S	74	24	7.2	7.2.5
Weight in grams	280	1230	1110	1200	1090	1165	1185	1005	1145	1235	1360

IV

INTERVIEWS WITH LUTHIERS BASED IN GRANADA

I carried out 4 interviews with luthiers based in the city of Granada, Spain in January 2003 as part of my research into the flamenco guitar. I found them to be very helpful and humorous characters. After the first 2 interviews I realized they were not willing to give me information on specific construction techniques so I did not push these issues. Instead I asked them general questions about the flamenco guitar and let them tell me their own ideas on the subject. The results are very interesting and their answers contain a wealth of information. In the first interview the questions I asked were perhaps not as focused, however as I progressed I tried to stick to the same basic questions whilst still letting the conversation flow, adding extra questions as new topics came up in conversation. Here is a comparison of the answers they gave to the same questions. The complete interviews, translated word for word as closely as possible can be found in the appendix and they may be very interesting to anyone learning about Spanish guitar history and construction.

	INTERVIEW 1	INTERVIEW 2	INTERVIEW 3	INTERVIEW4
MAIN DIFFERENCES BETWEEN FLAMENCO & CLASSICAL GUITAR	Cypress wood, narrower sides, shorter scale length on flamenco. Different soundboard bracing design.	Brilliant, crystalline sound for flamenco. Deeper, velvety sound for classical.	Flamenco more temperamental, quicker of sound, execution and action. Classical more technical and intense.	Flamenco has more open, metallic sound without body; lower bridge produces fret buzz. Classical has "rounder" sound with more volume and body.
WHY HAVE THEY EVOLVED SEPARATELY AS 2 DIFFERENT INSTRUMENTS?	Flamenco has had its splendour in last 30-40 years. Classical is much older.	The musical and social functions that they fulfil are completely different.	Different historical and cultural contexts.	Flamenco is more of a feeling than a measure. Classical music is written and therefore more rigid.
WHAT DO FLAMENCO GUITARISTS LOOK FOR IN A GUITAR TODAY?	Low, soft action and clean sound	Low action and brilliant sound.	A tool to allow them to exercise their activity through it's technical developments.	Volume as opposed to quality of sound
HAS THIS CHANGED IN RECENT YEARS?	Better quality woods and strings. Players study more	Yes, because the development of the music has had to be accommodated into design of the instrument	Nowadays flamenco guitarists study the historic tradition more, their playing is cleaner and more technical.	Scale length has dropped from 670 to 645mm.
HOW WILL THE FLAMENCO GUITAR CHANGE IN THE FUTURE?	That remains to be seen!	It will stay the same for a long time.	I live the present and evolve with it.	

CONCLUSION

The flamenco guitar is hardly known about outside Spain. It seems to be overshadowed by the classical guitar. Indeed if you talk to most people of the Spanish guitar they seem to think only of the classical. Perhaps this is because flamenco music is not understood by most, and perhaps because the flamenco and classical guitars *are* so similar in their design and construction nowadays. But their differences spring from the romantic period in the nineteenth century, when the classical guitar that we know today was developed for the professional concert musicians of the day.

At the same time there were small guitars on which the people of Andalusia played their traditional songs on the streets and at small gatherings at night. These instruments were much smaller than the classical guitar, produced a very different sound and were played with a more free and expressive technique. This folk musical tradition was never written and in time evolved into what we know today as flamenco.

It is from this time that a distinction has been made between the two types of instrument. They have fulfilled different functions in society since their early days. As flamenco players gradually adopted classical playing techniques and required more volume to play to an increasingly larger audience, the flamenco guitar has gradually adopted elements of the classical guitar. This is why nowadays both instruments look very similar to the untrained eye, but they sound and play very differently indeed.

There is much scope for further research into these small Andalusian folk guitars of the nineteenth century, as there is little available information on them at present.

APPENDIX 1 INTERVIEWS WITH GUITAR MAKERS

This section contains the translated and transcribed interviews with four guitar makers based in Granada, Spain, in January 2003. They were recorded with their permission using a dictaphone. A copy of the original recordings is to be found on the accompanying audio cassette.

INTERVIEW 1

Antonio Morales
Cuesta Gomerez no. 9
Granada, Spain

Date: 28. 1.2003

Q. What are the main differences between the classical and flamenco guitar?

A. For a start, the flamenco guitar is mainly made from cypress, it has narrower sides, shorter between the nut and the bridge.

Q. What is this measurement?

A. The classical guitar is between 65 and 66 cm., the flamenco guitar between 63.5 and 64, depending on the maker. The bracing is also different; each maker has his own preferences.

Q. Why do you think they have evolved separately (the Spanish and flamenco guitars)?

A. Because the classical guitar is older. The flamenco guitar has only had its splendour in the last 30 or 40 years. The classical is much older.

Q. What do you think flamenco guitarists look for in a guitar today?

A. They look for a smooth, low action, soft to play AND a clean sound. This is the difficulty: to achieve a clean sound AND to be soft to play.

Q. Do you think the flamenco guitar has changed much in recent years?

A. The biggest changes have been the strings. Gut strings did not have the sonority of modern strings. The woods used now are of better quality. It has been studied more. Of course it has evolved.

Q. How do you think it will change in the future?

A. That will be seen in the future.

Q. As for the construction, with method do you use for this?

A. I can't tell you this!

Q. What glue do you use?

A. Black or white glue. Black is hide glue, white is P.V.A. glue. It depends on the component.

Q. What finish do you use?

A. French polish or polyester

Q. Do you make some flamenco guitars from rosewood?

A. Yes, it depends on each player's preferences.

INTERVIEW 2

Francisco Manuel Diaz
Cuesta Gomerez 29
Granada, Spain 29. 1.2003.

Q. What are the main differences between the classical and flamenco guitars in terms of sound, in your opinion?

A. As far as the sound goes, evidently it is known that the flamenco guitar must have a very brilliant, crystalline sound. The classical guitar has a deeper, velvety sound. These are the principle characteristics because today in my case and as you have just seen it is not a case of using different woods, it is a case of acoustics. As you have just found out a flamenco guitar made of rosewood and with the correct acoustic development sounds brilliant and crystalline as much as a traditionally made cypress guitar. So the knowledge of the luthier is what makes the sound, definitely.

Q. Why have the classical and flamenco guitars evolved separately?

A. Because the musical and social functions which they fulfil are completely different.

Q. In the beginning there was only one type of guitar wasn't there?

There are live elements that give credit to the fact that there existed very thin guitars called *Bacalas Malaguenas* amongst others. These were about 4 cm deep on the sides, precisely to bring out that brilliant sound. Like a bell which has a certain sound depending on its size; the bigger, the more *bronca* (harsh, unpolished, hoarse, rough); the smaller, the more *estridente* (strident), like musical notes themselves: a bass string sounds like it does because of its length and thickness. The shorter you make the string by fretting it further up the neck you get a more brilliant sound because you are making it shorter. So making shorter in the case of the guitar sides will give an acoustic cavity with a more brilliant sound, and for hundreds of years these variations have been used.

Q. How old are the *Bacald* guitars from Malaga, which you mentioned earlier?

A. From the late nineteenth century and early twentieth century.

Q. So from that time more or less there has been a distinction between classical and flamenco guitars?

A. Yes, they've run in parallel. Until that time flamenco was not greatly exposed to the public so there was no need; when flamenco started to flourish there was a need for the guitar to sound different to the classical guitar and the vihuela.

Q. What would you say flamenco guitarists look for nowadays in a guitar?

A. The action and the sound: the flamenco guitar is played with more temperament and the action must be such that tit can be played in a tablao flamenco for 2 or 3 hours. Easy action is what they ask for and this is one of the main differences between the flamenco and classical guitars. And the brilliant sound. The type of wood is something allegatory.

Q. Have the things that guitarists look for changed in recent years?

A. Yes, it's changed because their technique has changed. At the start of the twentieth century there was at the most one guitar player who had a futuristic technique: Miguel Borni. The musical idea, the speed of its development of the music, all this had to be accommodated into the design of the instrument.

Q. So it's slowly changed throughout the twentieth century?

A. Of course.

Q. How do you see the future of the flamenco guitar? Do you think the design will stay the same or change?

A. I think it will stay the same for a long time. It has achieved and already ambitious goal.

Q. The other questions I have are about construction. A. You can't be the chicken and the

hen at the same time! Q. Ha ha ha, good one!

INTERVIEW 3

Bellido y Gil de Avalle
CalleRealejo 15 Granada

Date: 29. 1.2003.

Q. Which are the main differences between the classical and the flamenco guitar in terms of sound for you?

A. Sound is something that doesn't have direct *calificativos* (qualifiers). All the *calificativos* applied to sound are inherited from other things. And because it has no *calificativos* it is hard to define a difference, its virtues or charms. There is nothing made to define this. Because we inherit, we create metaphors, similarities; what characteristics do we have then? Every person will tell you in his or her own way, really the difference is everything: it is like a man and a woman, what difference is there between him and her? They have two eyes, two legs, two hands, structurally they are the same, physically there

is very little difference between them but they are substantially different. That is the difference between a flamenco and a classical guitar. If we then go to musical differences, a flamenco guitar is more temperamental, quicker of sound, execution and action. A classical guitar more technical, more intense in sound. These are still only adjectives that can be interpreted as one wishes.

Q. Why do you think they have evolved separately (the classical and flamenco guitar)?

A. Why do men and women evolve? Because they are people. Because it is the Spanish guitar, the historical and cultural contexts means there is development. It's like if you go to America and you take an acoustic and an electric guitar; Why do they develop? Because their cultural contexts allow them to. This is what has happened with the Spanish guitar.

Q. What do today's flamenco guitarists look for in a guitar?

A. They usually look for a tool for work. They look for something that allows them to exercise their activity through its technical development or knowledge. And what is their activity? To be in a concert hall, to accompany singing and dancing, to make up a sextet, a three piece, whatever the need may be of the individual. And for every need there has been an instrument developed.

Q. Do you think that what guitarists look for in a guitar has been changing in recent years?

A. Totally and directly. The evolution of the guitarist is quite significant. It evolves greatly. It fuses more with the study of historic tradition and becomes a lot more technical, clean nowadays.

Q. And when has this taken place, over the last 20 years, 50 years...?

A. No man, this has been over the last 10 years approximately. Q.

How do you see the future of the flamenco guitar?

A. One thing I am not is a futurist. I live the present and evolve with it. I'll leave that to the astrologers!

INTERVIEW 4

German Gutierrez
Reyes Catolicos
Granada Spain

Date: 30. 1.2003.

Q. What are the main differences between the flamenco and classical guitars?

A. The flamenco guitar has an open sound. This sound doesn't have body and it is a metallized sound. The bridge is lower so the strings buzz on the frets, metallizing the sound and dampening the sound energy. This is the typical flamenco sound. The classical guitar has more body and is "rounder". It moves shall we say in a spherical way, while the flamenco guitar sound moves in parallel divergents [sic]. And the flamenco is a sound

which spits out; and the classical is a sound which stays a little bit inside the guitar, making an enveloping aurora of sound.

Within the classical sounds there are sounds which are more melancholy, more spiritual and others which are more serious. The German guitars have a sound which is very square, very dry, very mathematical. The Spanish guitar for playing, for example, all the Spanish musicians, Falla, Turina, it's a happier sound within the classical, a more brilliant sound, shall we say a more flamenco sound, the sound we bring out.

Q. How is this difference in sound achieved?

A. The differences in sound are achieved with pure physics. Everything in the universe is pure physics - it must be discovered by making many guitars. And how is it discovered? The hardness of the woods, the measurements of the harmonic box; if you make a harmonic box which has better measurements than someone else you'll be more correct. 40 thousand things. The chain of so many causes and effects, do you understand? Body shape, hardness and age of the woods. 40 thousand things. There isn't a simple and easy explanation. It's for you to find it, it runs in your body's own electricity. There was once a man who they called *sartenes* (frying pans) who used to make really badly made guitars but they sounded really good. You must discover it yourself. It's not the same to varnish to the left with your hand to doing it to the right. One may laugh when one hears this, but he who is sensible and listens...it's pure physics and that's how it is.

Q. What do you mean when you say the flamenco guitar sound travels in divergents [sic]?

A. It's an open sound. You have convergent and divergent parallels, that is to say, logically, in the moment you make the string sound, the sound is heard by vibration of the air molecules; it opens then. Depending on the energy produced by the sound box, depending on the sound it produces (it could be any sound e.g. a hammer blow) it will have a faster or slower speed. Depending on the speed and the quantity of vibrational energy, it brings out a certain kind of sound. Depending on many things, higher or lower strings etc. If you put a weight on the guitar the sound changes (he demonstrates this). If you put a double box on it, you get more quantity of sound because the body absorbs it. (the player's body absorbs the sound). It's no mystery, it's pure physics, it's all about thinking.

Q. Why have the flamenco and classical guitars evolved separately?

A. They've evolved separately because the classical guitarists want one type of sound, because classical has always been one class of music, written. And in music you can't write 'un, dos, PLAS!' [sic; the intended meaning is unclear]. Do is Do, Re is Re and Sol is Sol and that's that. It's written and that's it and you play it. The other in turn was a music that came out from inside the soul of the individual. It's a night of *huerga* (party) of *flamencura* (flamenconess), a *rasgado,* that sound, it's not a measure, it's a feeling.. .So that's how it...

Q. How long have flamenco guitars been made for?

A. Flamenco guitars have been made forever. Flamenco evolves through...it comes from India.

Q. With the *gitanos!*

A. Not exactly the *gitanos.* It comes from India. In India they are not gypsies. What happens is that the gypsy is a more errant person, he doesn't have a fixed place, so he's had more time for playing music; so all his life he's played guitar so the gypsy more or less has a more musical ear, like the black man has a more musical ear. The blacks have an ear more adapted to music than the whites.

Q. Because from children they're listening to the rhythms and they have it inside them, eh?

A. But if you analyse that, it's pure physics. If you ever get married you test it: you're wife puts on a belt 24 hours a day with classical music and I assure you that the child comes out knowing classical music and playing classical music. Because from when we are inside the mother, genetically we are already preparing ourselves, and the sooner you learn something the faster you learn it. If you go now to China to learn Chinese, you'll never learn Chinese in your fucking life, but if they take you there when you are 6 months old, you start to play with the kids and 6 months later you'd come back talking Chinese. So it's the same for everything else, apply it to everything. So the knowledge is acquired by the person who looks for it, just like you are looking for it now. Someone who smokes joints all day hasn't come to ask the master. The knowledge is acquired by he who wants it. Things are achieved when one wants them; the more you want, with more force. That's why when you said to me you weren't sure if you wanted to make guitars for a living, never say this. You must decide and you have the capacity for thinking. You have to choose between becoming a guitar maker or becoming a computer engineer…

Q. To have things clear in my mind, eh?

A. What you want, you must define for once, find the path.

Q. Ha, ha, ha, yes you're right!

A. So that path you decide to go down, even if afterwards you just do it for a hobby, but whatever's going to feed you, you have to be the number 1. And, if you're not, because God didn't give you the intelligence, at least try to be it. Me, all my hopes are to be the no. 1. I know that he is Antonio Marin Montero. He's the best guitar maker in the world for me, because of his knowledge, because of everything.

Q. Who?

A. Our president here of the luthiers of Granada, Antonio Marin Montero. So that knowledge which our man has is transmitted if you go and watch him work or you simply talk to him, and you WANT to learn; now, if you go and watch him work and you see him like a strange creature, you won't see anything in him. But if you see the elegance with which he handles his tools, how he sharpens, how he makes, how he talks…

Q. Does he have a shop here?

A. He has a workshop but I won't send you there because he already has forty people there, and if you go, sent by me, he will just think "another pain in the arse", because they don't let him work every day. People go there from China, Japan, from everywhere in the world. We must let him work and rest. But what I mean is that for example, you go to a painting exhibition, if you want to see, you will see, but if your mind is not prepared to see, you won't see anything. So, as I say, if you are going to make guitars, start to buy wood. And that guitar you have made, you are going to sell it and it is going to give you enough to eat and that is it. You have made a guitar, Full stop. It is not that much, but for what they have given you it is great. So you make another and another and slowly you start making money because we are all made up of matter and spirit: matter is making money and spirit is to do whatever you please, in your case, to make guitars. So because you want to make guitars you must be the number one, and to be the number one you need good materials because if you are a cook you can't make a meal if you don't have good ingredients. You'll make it good, much better than one who doesn't know but if you go to make rice and you don't put in the good *langostinos* or prawns in the rice, it will be a good rice but it will be lacking the taste of saffron, of the good condiments.

Well the same with good guitars. So you must find a good place, don't make them in a basement because of the damp, make them high up.

Q. Is the humidity in your workshop controlled?

A. I control the humidity when I assemble guitars. In the mean time I don't have to control anything. When it comes to assembly I use a dehumidifier in my room.. .But what I do instead of that is to do long cycles; I assemble the guitars in the summer when the climate is totally dry, I use my hygrometer and that's it.

Q. And what percentage is it at?

A. At 25 or 30 % humidity

Q. Very low then?

A. Yes, very dry because that's how the wood crystallizes better and the tensions always.. .When you glue two pieces of wood together you always get some tension because one works one way and the other in another way. Those tensions tell you a lot when it comes to the sound. The sound is produced at the intersection of bodies. [He demonstrates this by ringing a tuning fork and sliding it against the back of a guitar. It's sound is much louder when it passes over the back braces]. Woods of a different tension take away some vibrational energy. You need a very dry, crystallised material and when you put it together you need a very dry climate. That's why Granada is the best place in Spain for making guitars, no matter if they're twisted or whatever. Now, if you're a good cabinet maker you'll make a nice piece of furniture but.. .if the furniture's well made or badly made, the physics of it is that if it's damp, the guitar is going to have less of a sound.

Q. What do flamenco guitarists look for nowadays in a guitar?

A. Nowadays the guitarist looks for volume. In the old days no, because volume is the contrary to the quality of the sound. The more volume, quality is lost. When the instruments sound is of more quantity, you loose quality. And they look for volume. That quality of that small guitar of the start of the [twentieth] century which didn't have volume but had a feeling, a quality of sound, but of course, it was to be listened to, shall we say, amongst family, amongst 8 or 10, the *cabales* as we called them. But nowadays it's played in a theatre, in a bigger place, so one needs to get more volume, and we loose quality.

Q. And how can more volume be achieved?

A. A small guitar sound like a small guitar, a big guitar sounds like a big guitar. But of course, you must make *zplantilla* that is balanced with the hardness of the woods and the length and width of it. Just any wood won't do because it may not be sufficiently crystallised; it may not be structurally as hard; it's not the same to make a guitar from the bottom of the tree to making it from the top of the tree. At the bottom there are more mineral salts. The bottom of the tree holds all the weight from the top of the tree. At the bottom there are more mineral salts. The bottom of the tree holds all the weight from the top so structurally it is harder at the bottom

Q. So is it best from the bottom or the top?

A. From the bottom from 1.8m upwards. Any lower and it's too.. .you've got to play with the beauty of it; it is better for the sound because it's harder; but it's stained, it has iron deposits, potassium, mineral salts and it's not homogenous.

Q. Good information, thank you! Have the things which guitarists look for changed over the years?

A. In the old days 67cm. Scale length. Afterwards they went down to 66cm and now it's 65cm and they're asking for 64.5cm. So it's loosing quality.

Q. Is this the flamenco guitar?

A. Flamenco and classical. Flamencos didn't have a problem because when it comes to singing, they'll *sayponlo al dos,* the capo at the second fret at least, so even if the string length is longer, on the second fret you still get good playability. But if you play open it's harder because you have to stretch more, which was O.K. for classical guitarists because they studied more so that compensated for it. But the longer the string, the better the sound because the harmonics are more beautiful. Just listen to the Indian sitar, it has beautiful harmonics. On longer strings, the sound is not so fast, it's more melancholy, more romantic, a more beautiful sound. If a sound is faster it is therefore more strident, and the human brain does not capture speed. If a sound is very fast and also very metallic e.g. with the *bandurria* then you can capture it because shall we say it is recorded very strongly, understand?

Q. And how is the bandurria tuned?

A. The same as the guitar.

APPENDIX 2

CONSTRUCTION OF A FLAMENCO GUITAR

This section describes the construction procedure used to build a flamenco guitar. I used the free method of construction as opposed to using a mould to make the body of the instrument. This is done by first making a *solera',* this is a board onto which the soundboard and neck are secured in order to build the sides and back onto them. I used a plan of a Santos Hernandez instrument[16] and various books for guidance.[17]

- I constructed the *solera* from M.D.F. board and hollowed the section of the lower bout so as to produce a 3mm dome on the finished soundboard. The neck section of the *solera* was ramped down from the neck-body join to the nut by 3mm to produce the required neck angle[18]. However I later found this to be too great a back-angle on the neck, producing an excessively low bridge height.
- I thicknessed the soundboard to between 2.6 and 2.4mm.
- I thicknessed the back and sides to 2mm.
- I made the sound hole rosette off the guitar by glueing died strips of veneer together on a mould. I then routed out a channel in the soundboard using a Dremmel and glued in the rosette. I then cut out the sound hole using a circle cutter.
- I constructed the neck, together with its headstock veneer and slipper heel. I carefully drilled the machine head holes using a jig and cut out the slots in the headstock with a fret saw.
- After checking that the humidity was between 45 and 55% I set to work glueing on the soundboard bracing using a go-bar press and the shaped solera.
- Next I glued the neck to the soundboard after carefully aligning the two.
- I then bent the sides on a bending iron to the appropriate shape. I dabbed some water onto the tight curve that forms the waist to aid bending without cracking.
- The next step was to join the sides into the slots in the neck and join them at the back by glueing them to the tail block.
- I joined the sides to the soundboard with a series of tantalons, spaced 2-3mm apart.
- I prepared the back by glueing on the slightly arched braces and the centre strip reinforcement.
- The linings were glued to the sides and the whole body sanded with a sanding board to take the shape of the back, then the back was glued on.
- With the body now almost complete I proceeded to cut the channels for the binding and purfling , which were then glued on and held in place with masking tape.
- I prepared the fingerboard blank by planning and sanding it then cutting the fret slots using the fretting jig for the 650mm scale length. The fingerboard edges were kept square to each other until this was done, then cut to the taper shown on the plan.
- Next I held the fingerboard in place with clamps and drilled 2 locating holes through the 1st and 12th fret slots to accommodate 2mm locating pins. The fingerboard was then glued on and clamped.
- The neck was shaped with a spokeshave, plane and sandpaper.
- The frets were hammered in, stoned down and reprofiled with a file.
- The whole instrument was then French polished.

[16] Courtnall, Roy, 1993, pp. 53-60.
[17] Courtnall, 1993; Cumpiano andNatelson, 1993.
[18] Courtnall, Roy, 1993, p. 164.

- I then set to work making the bridge and shaping its underside to accommodate the domed shape of the soundboard.
- I made a clamping caul with the same curvature as that of the soundboard, with slots cut out to accommodate braces. The bridge was then glued and clamped on after scraping off the French polish on its glueing area of the soundboard.
- After making the nut and saddle, and fitting the machine heads the guitar was ready for preliminary stringing up.
- After allowing the shellac to harden for 4 weeks I stuck on the scratch plates to the soundboard, a feature of flamenco guitars.

Materials list:

- Neck: cedar. *Cedrela odorata or Cedrelafissilis.*
- Back and sides: cypress. *Cupressus macrocarpa.*
- Soundboard and bracing: Swiss pine. *Picea excelsa.*
- Fingerboard: ebony. *Diospyros piscatoria.*
- Bridge and bindings: Indian rosewood. *Dalbergia latifolia.*
- Linings: mahogany. *Swietenia macrophylla.*
- Glue: Titebond yellow P.V.A.

APPENDIX 3

AUDIO CASSETTE CONTENTS

Side A:

Interviews with Spanish guitar makers, January 2003:

1. Antonio Morales.
2. Francisco Manuel Diaz.
3. Bellido y Gil de Avalle.
4. German Gutierrez.

Side B:

Examples of various *palos* or styles of flamenco.

1. Bulerias*: played by an anonymous Gypsy musician, this is an excellent example of Gypsy style playing.

2. Soleares*: played by my Italian friend Fabri who lives in Granada, and sung by a passing drunkard! My thanks to them both.

3. Solea por Bulerias: this is a mixture of the previous two styles, by the band *Los Martires del Compds.*

4. Martinete: one of the oldest forms of flamenco song, originally the beat would have been kept by the blacksmith's hammer. Sung by *El Capullo de Jerez,* 2001.

S.Tangos: another studio track by the above singer, 2001.

6. Alegrias: this upbeat *polo* literally means *happiness.* By *Aurora Vargas.*

7. Fandangos de Huelva: an example of flamenco from a *tablao.* By *Los Candelosy su Tablao Flamenco,* 1974.

8. Bulerias: any compilation would be lacking without a live track from the late *Camaron de la Isla,* a Gypsy singer who has greatly influenced the present generation of flamenco musicians.

9. Bulerias: by *Radio Tarifa,* 1996; this band produce a fusion of flamenco with other styles, in this case a traditional *palo* played on Arabic instruments.

*: Recorded live on a Dictaphone in El Albaycin, one of the old neighbourhoods of Granada, January 2003. My thanks for allowing me to record them.

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