

Children at a funeral

for prepared piano

James Wood

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*Children at a Funeral was written for Andrew Ball
as a result of a Holst Foundation Award 1995*

Notes on the preparation

The following materials are required:

Screws (galvanised - hardened twin-thread)	no. 10 x 45mm (1¾")	3
	no. 12 x 50mm (2")	2
	no. 12 x 62mm (2½")	6
	no. 12 x 80mm (3¼")	1

Bolts	M4 x 30	25
	M5 x 40	3
	M5 x 50	16
	M5 x 70	5
	M6 x 75	18
	M6 x 40	3

Note: These tables correspond with preparations made on a Steinway B piano. The first performance, however, was given on a Boston G193 (roughly equivalent in size to a Steinway A). Although smaller (requiring some of the dimensions given here to be slightly reduced), this piano proved to be very well suited to the preparations. Note that, on the Boston, the strings from F1 to B1 inclusive are only double strung (whereas on the Steinway B they are triple) - in this case only one of the two rubber wedges are needed. It will also be found that the position of the rubber wedge for Bb1 is limited by the piano frame - in this case the wedge should be positioned close to the piano frame. I am grateful to Colin Turner and the technicians at Steinway & Sons for their help and advice during the preparations at the Steinway Studios for the first performance - this was given by Andrew Ball at the Wigmore Hall on 17 February 1997.

Rubber wedges (see following tables for sizes)

The rubber wedges can be cut from long rubber strips (or sheets), normally available from a good rubber-merchant - the rubber should be rather hard (for example, not unlike that used on the soles of shoes), and can be cut quite easily with a Stanley knife. Two thicknesses are used: 5.5mm (for most of the wedges) and 15mm for the 'fat wedges'.

When cutting the wedges it is highly recommended to cut a little notch (or groove) either side and a few MM from the point of the wedge so that it can be 'clicked' into place when wedged between the strings. This stops the wedge from jumping out when the string is struck. This is particularly important on the lower strings, and when the wedges are placed in the middle of the strings. Obviously the size of the notch depends on the thickness of the string that is to fit in it, and the exact position of the notches should be such that the width between them matches (or is very slightly greater than) the distance between the adjacent strings of the course in question.

When cutting the 'single-string' wedges (very lowest register), a deep slot should be cut from the tip of the wedge upwards about 15 mm so that the wedge can fit around the string like a clamp.

If this slot also is cut rather wedge-shaped (wider at the top than the bottom), this will again help to hold the wedge in place when the string is played.

Positioning and Tuning

The following tables show the optimum positions for the screws, bolts and wedges for each course of strings in order to achieve the given tunings of the most prominent 'sub-harmonics' and harmonics. In the case of the strings with 'sub-harmonics' - the sub-harmonic pitch given is the lowest audible one (in most cases a complex spectrum of other harmonics will result, but it is the lowest one that should be tuned). These sub-harmonics are produced when screws or bolts are placed at or near the middle of the string - the tuning is influenced both by the weight (i.e. length) of the screw or bolt, and by its precise position. The longer (heavier) the bolt, the deeper the sub-harmonic. For fine tuning, moving the bolt towards the tail of the piano sharpens the sub-harmonic pitch, moving it towards the keyboard end flattens it. The same is true of the very long rubber wedges (eg for C2, B1 and Bb1) which produce a deep, resonant (rather 'funky') thud.

When fine tuning the position of the screws and bolts, the most important aspect is the (microtonal) *relationships* (sometimes very small intervals) between the sub-harmonic pitches, rather than their precise *actual* frequencies. Furthermore it will be noted that the pitches of the sub-harmonics, when played in a chromatic scale, do not form a straight line (i.e. when a downward chromatic scale is played, some sub-harmonic pitches will be heard to go up and some to go down) - these relationships are very important to observe.

Bowing cords

Very long (c. 6 metres, tripled) pieces of nylon cord are used (c. 2 mm thick), and threaded between the strings as shown on the tables. The cord should be rosined with cello rosin, with more rosin in the middle of the cord than at the ends (this is the best way to achieve the *crescendi* and *diminuendi*).

With the piano lid removed, two 'side panels' should be clamped to the piano frame (either side of the music desk). Three pulleys are then fixed to each side panel, at a position determined by the 'cord route' for each cluster. The cords then pass from the strings (across the piano), up through the pulleys on either side of the mast, and then back towards (and on either side of) the player. In this way the player can bow the piano from his normal seated position, and therefore bow and play the keyboard simultaneously. The instruction 'right-side cords' means that the player should pull the cords for that cluster from the right-side pulleys, and the instruction 'left-side cords' means he should pull from the left-side pulleys. Obviously, for any given cluster/ set of cords, these instructions ('right-side cords', 'left-side cords' will always alternate). Care should be taken, however, to prevent the three sets of cords getting entangled with each other!

Scraping the bolts (bar 94 to the end)

The three bolts to be scraped are as follows -

- 1) Bb5 (around the middle of the string - sounding Ab4 - 9cents)
- 2) G5 (around the middle of the string - sounding Bb4 + 34 cents, i.e. higher than 1)
- 3) F#3 (around the middle of the string - sounding c. B3)

It is recommended to saw off the top of these bolts in order to avoid hitting the bolt-head with the rapid upward stroke.

Dynamics

Note that, because of the fact that different types of preparation can result in drastically different dynamic levels, all the dynamic markings indicate the dynamic that is to be *played*, and not necessarily the dynamic that will be *heard*. For example the extreme upper register (C#6 to C7) sounds very quiet, and so in general is marked to be played rather strongly).

Preparation Tables

General note - in the Preparation Tables which follow, the horizontal lines represent the strings themselves, so the preparation data (in the spaces between the lines) applies precisely to the corresponding gaps between the strings. Notice that in the upper register (Db6 to C7), sometimes rubber wedges are placed between string 3 of one course and string 1 of the next course (eg. between C7 and B6).

The instruction '**kbd end**' means at the extreme end of the string at the keyboard end, the instruction '**off tail end**' means about 10mm from the bridge at the tail end, '**extr tail end**' means at the extreme tail end of the string (or as near the tail end bridge as possible), and '**exact mid**' means the exact mid-point of the string (1st harmonic above fundamental). '**mid**' means approximately in the middle, the exact position to be found by experiment, and with reference to the pitch chart.

Measurements - all measurements are in mm

Position - figures represent the distance between the mute and the tail end of the string; that is to say the point where the longer of the pair of strings crosses the 'bridge' at the tail end of the sound-board (not to the fixing peg).

F_r/sub-h - Frequency of the lowest audible sub-harmonic - this is expressed as an equal-tempered note on the keyboard, plus or minus x cents. (100 cents = 1 semitone)

F_r/h - Frequency of the highest audible harmonic - the position can be found easily by finding the corresponding harmonic by sliding a finger up the string whilst playing the string repeatedly.

Preparation Tables

	Mute	Guage	Length	Width at top	Thickness	Position	Fr/sub-h	Fr/h	Cord route
C7	Screw	No 10	45			mid	G4 + 22		
	R-wedge		28	12	5.5	kbd end			
B6	Screw	No 10	45			mid	F#4 + 19		
Bb6	Screw	No 10	45			mid	F#4 - 34		
	R-wedge		28	12	5.5	kbd end			
A6	Screw	No 12	50			mid	D4		
Ab6	Screw	No 12	62			mid	C4 + 30		
	R-wedge		28	12	5.5	kbd end			
G6	Screw	No 12	62			mid	B3 + 44		
Gb6	Screw	No 12	62			mid	B3 + 6.		
	R-wedge		28	12	5.5	kbd end			
F6	Screw	No 12	62			mid	B3		
E6	Screw	No 12	62			mid	A#3 + 50		
	R-wedge		28	12	5.5	kbd end			
Eb6	Screw	No 12	50			mid	C4 + 27		
D6	Screw	No 12	62			mid	B3 - 23		
	R-wedge		28	12	5.5	kbd end			
Db6	Screw	No 12	80?			mid	Ab3 - 62		
C6	Bolt	M4	30			mid	Db5 - 11		
B5	Bolt	M4	30			mid	Bb4 + 39		
Bb5	Bolt	M4	30			mid	Ab4 - 9		
A5	Bolt	M4	30			mid	Bb4 - 11		
Ab5	Bolt	M4	30			mid	F#4 - 6		
G5	Bolt	M4	30			mid	Bb4 + 34		
Gb5	Bolt	M4	30			mid	A4 + 20		
F5	Bolt	M4	30			mid	Eb4 + 9		

D - register: ghostly shadow

A - register: brightest

B - register, less bright

	Mute	Guage	Length	Width at top	Thickness	Position	Fr/sub-h	Fr/h	Cord route
E 5	Bolt	M4	30			mid	Db4 + 20		
Eb 5	Bolt	M4	30			mid	C4		
D 5	Bolt	M4	30			mid	C4 + 50		
Db 5	Bolt	M4	30			mid	C4 - 34		
C 5	Bolt	M5	50			mid	F3 + 6		
	Bolt	M4	30			extr tail end			
B 4	Bolt	M5	50			mid	F3 - 39		
	Bolt	M4	30			extr tail end			
Bb 4	Bolt	M5	50			mid	E3 - 23		
	Bolt	M4	30			extr tail end			
A 4	Bolt	M5	50			mid	Eb3 + 20		
	Bolt	M4	30			ext tail end			
Ab 4	Bolt	M5	70			mid	C3 - 11		
	Bolt	M4	30			extr tail end			
G 4	Bolt	M5	50			mid	C#3 + 14		
	Bolt	M4	30			extr tail end			
Gb 4	Bolt	M5	50			mid	C#3 + 8		
	Bolt	M4	30			extr tail end			
F 4	Bolt	M5	70			mid	C3 + 6		
	Bolt	M4	30			extr tail end			
E 4	Bolt	M5	50			mid	Bb2 - 22		
	Bolt	M4	30			extr tail end			
Eb 4	Bolt	M6	75			mid	Gb2 - 20		
	Bolt	M4	30			extr tail end			
D 4	Bolt	M6	75			mid	Gb2 - 62		
	Bolt	M4	30			extr tail end			
Db 4	Bolt	M6	75			mid	Gb2 - 58		
	Bolt	M4/M5	30/50			extr tail end			
C 4	Bolt	M6	75			mid	E2 + 45		
	Bolt	M4/M5	30/50			off tail end			
B 3	Bolt	M6	75			mid	Eb2 + 11		
	Bolt	M5	40			off tail end			
Bb 3	Bolt	M6	75			mid	Eb2 - 11		
	Bolt	M5	40			off tail end			
A 3	Bolt	M6	75			mid	D2 - 23		
	Bolt	M5	40			of tail end			

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	Mute	Guage	Length	Width at top	Thickness	Position	Fr/sub-h	Fr/h	Cord route
Ab 3	Bolt	M6	75			mid	Db2 + 16		
	Bolt	M5	40/50/70			off tail end			
G 3	Bolt	M6	75			mid	Db2		
	Bolt	M5	40/50/70			off tail end			
Gb 3	Bolt	M6	75			mid	Db2 - 58		
	Bolt	M5	40/50/70			off tail end			
F 3	Bolt	M6	75			mid	C2 +9		
	Bolt	M5	40/50/70			off tail end			
E 3	Bolt	M6	75			mid	B1 + 17		
	Bolt	M5	40/50/70			off tail end			
Eb 3	Bolt	M6	75			mid	B1 - 9		
	Bolt	M6	40			off tail end			
D 3	Bolt	M6	75			mid	B1 - 36		
	Bolt	M6	40			off tail end			
Db 3	Bolt	M6	75			mid	Bb1 - 23		
	Bolt	M6	40			off tail end			
C 3	R-wedge		25	7	5.5	exact mid		C4	
	R-wedge		25	7	5.5	exact mid		C4	
B 2	R-wedge		25	7	5.5	exact mid		B3	
	R-wedge		25	7	5.5	exact mid		B3	
Bb 2	R-wedge		25	7	5.5	exact mid		Bb3	
	R-wedge		25	7	5.5	exact mid		Bb3	
A 2	Bolt	M6	75	BOWED		mid			UNDER
	Bolt	M5	70	CLUSTER 1		mid			UNDER
Ab 2	Bolt	M6	75	(bowed AND prepared)					OVER
	Bolt	M5	70	Thread double cords		mid			OVER
G 2				tail side		mid			OVER
				of dampers					UNDER
G 2	Bolt	M6	75			mid			UNDER
	Bolt	M5	70	(quasi sul taste)		mid			UNDER
Gb 2	R-wedge		25	7	5.5	exact mid		Gb3	
	R-wedge		25	7	5.5	exact mid		Gb3	
F 2	R-wedge		25	7	5.5	exact mid		F3	
	R-wedge		25	7	5.5	exact mid		F3	
E 2	R-wedge		25	7	5.5	exact mid		E3	
	R-wedge		25	7	5.5	exact mid		E3	
Eb 2				BOWED					UNDER
				CLUSTER 2					UNDER
D 2				(no preparation)					OVER
				Thread double cords					OVER
Db 2				extreme keyboard					UNDER
				end of strings					UNDER
				(quasi sul pont.)					UNDER

C register: less bright still, becoming darker and richer

1st harmonic

bowed (prepared) cluster 1 (sul taste)

1st harmonic

bowed cluster 2 (sul pont)

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	Mute	Guage	Length	Width at top	Thickness	Position	Fr/sub-h	Fr/h	Cord route	
percussive, funky	C 2	R-wedge	75	24	5.5	mid	F#1 + 30			
		R-wedge	75	24	5.5	mid	F#1 + 30			
	B 1	R-wedge	75	24	5.5	mid	F#1 - 6			
		R-wedge	75	24	5.5	mid	F#1 - 6			
	Bb 1	R-wedge	105	24	5.5	mid	Eb1 - 25			
		R-wedge	105	24	5.5	mid	Eb1 - 25			
bowed cluster 3 (sul tasto)	A 1		BOWED						UNDER	
			CLUSTER 3						UNDER	
			(no preparation)						OVER	
	Ab 1		Thread triple cords						OVER	
			tail side						OVER	
	G 1		of dampers						UNDER	
		(quasi sul tasto)						UNDER		
rich, gong-like	Gb 1	R-wedge	30	10	5.5	170		Gb5		
		R-wedge	30	10	5.5	170		Gb5		
	F 1	R-wedge	35	12		175		F5		
		R-wedge	30	10		175		F5		
perc'ive, funky 7th harm. (rich) 5th harm. (pure)	E 1	Fat R-wedge	70	25	15.0	610		G#3		
		Fat R-wedge	25	18	15.0	625		G3		
	D 1	R-wedge	45	17	5.5	765		C4 - 4		
		R-wedge	45	17	5.5	800		B3 - 4		
misc. harmonics, gong-like	C 1	R-wedge	75	24 or more	5.5	mid	F0 ca.			
		R-wedge	75	24 or more	5.5	mid	E0 ca.			
	Bb 0	R-wedge	52	15	5.5	920	complex around A1			
		R-wedge	52	15	5.5	930	complex around Ab1			
misc. harmonics, gong-like	Ab 0	R-wedge	50	15	5.5	723	harmonics up to Gb3			
		R-wedge	50	15	5.5	730	harmonics up to F3			
	Gb 0	Gb0 not used								
	F 0	F0 not used								
	E 0	E0 not used From Eb0 onwards preparation details apply to the line (string) below them								
	Eb 0	Single string R-wedge		30	25	5.5	397	harmonics up to Db3		
Single string R-wedge		30	25	5.5	400	harmonics up to C3				
Db 0	Single string R-wedge		30	25	5.5	405	harmonics up to B2			
	C0 not used									
B -1	B-1 not used									
	Bb-1 not used									
Bb -1	Single string R-wedge		60	25	5.5	288	complex			
A -1										

Note - references to specific harmonics assume that the '1st harmonic' sounds one octave above the fundamental, the '4th harmonic' sounds two octaves and a major third above the fundamental, and so on.

To the memory of my Father

Children at a funeral

for prepared piano

James Wood

1 $\text{♩} = 84 \text{ ca.}$

pp
poco mf
Ped.

This system contains the first two measures of the piece. The music is in 9/8 time and begins with a piano (*pp*) dynamic. The right hand features a melodic line with triplet markings. The left hand provides a rhythmic accompaniment. A pedal marking is present below the first measure.

3

(7) 3

This system contains measures 3 and 4. Measure 3 continues the melodic and accompanimental patterns. Measure 4 features a more complex accompaniment with a triplet of eighth notes in the bass line. A large blue watermark "Preview File Only" is overlaid diagonally across the page.

5

This system contains measures 5 and 6. The musical texture remains consistent with the previous measures, featuring a melodic line in the right hand and a rhythmic accompaniment in the left hand.

7

p
(pp)
(mf) *p*

This system contains measures 7 and 8. Measure 7 continues the melodic line. Measure 8 features a dynamic shift to piano (*p*) and includes a triplet in the bass line. The dynamic markings *(pp)*, *(mf)*, and *p* are indicated throughout the system.

9

Musical score for measures 9-10. The piece is in a minor key. Measure 9 features a piano (*pp*) treble staff with a triplet of eighth notes and a bass staff with a triplet of eighth notes and a dynamic marking of *(mf)*. Measure 10 continues the triplet patterns in both staves.

11

suddenly alert...

Musical score for measures 11-12. Measure 11 continues the triplet patterns. Measure 12 features a dynamic marking of *p* in the bass staff and a dynamic marking of *mp* in the treble staff with a five-note slur. The text "suddenly alert..." is written above the treble staff with an upward-pointing arrow.

13

Musical score for measures 13-14. Measure 13 features a dynamic marking of *p* in the treble staff and *(p)* in the bass staff. Measure 14 features a dynamic marking of *mp* in the treble staff. Both measures contain complex rhythmic patterns with slurs and fingerings.

155

Musical score for measures 155-156. Measure 155 features a dynamic marking of *mf* and a five-note slur with a 5.3 fingering. Measure 156 features a dynamic marking of *mp* and a five-note slur with a 5.3 fingering. Both measures contain complex rhythmic patterns with slurs and fingerings.

165

6:4

poco a poco cresc.

f

175

f

mf

mp

18

(mp)

f

mf

r.h. en dehors

195

5:3

(mf)

sim.

poco tenuto - a tempo

20₅

f *mp* *poco f*

f

poco a poco affrettando

22

ten.

24

ten.

26

♩ = 112

28₅

f brilliant

* Ped.

* Ped. simile, according to left hand phrasing -----

30⁸

5 5 5 5 5

3 3 3

33⁸

rubato... *a tempo* (♩ = 112)

5 5 5 6:4 5

short *gently...* *mf*

mp *mf* *

leggiero

35⁸

5 5 5 5

3 3 3

Ped. as before, but gradually using less and less pedal

37⁸

piu legato

5 5 5 5 5

3 3

398

rather placidly...

more energetic and lively...

418

rubato

slow, accel - - -

ten.

438

a tempo

rubato (sim.) - - - - -

a tempo

458

com primo (poco ped.)

468

poco rit. - - - - - *a tempo*

488

f molto sub.

*

498

mf

f

♩ = 96
more relaxed

508

faster again (♩ = 112)

Musical score for measures 528-547. The score is written for piano in 7/8 time. It features a complex melodic line in the right hand with frequent slurs and accents, and a more rhythmic accompaniment in the left hand. The tempo is marked as 'faster again' with a quarter note equal to 112 beats per minute. The dynamic is marked 'f' (forte). The key signature has one flat (B-flat major or D minor). The piece concludes with a fermata over the final chord.

Musical score for measures 548-557. The score continues in 7/8 time. The right hand features intricate melodic patterns with many slurs and accents. The left hand provides a steady accompaniment. The dynamic remains 'f' (forte). The piece ends with a fermata over the final chord.

rubato... a tempo

Musical score for measures 558-564. The score is written in 3/4 time. The tempo is marked 'rubato...' and then 'a tempo'. The right hand has a melodic line with slurs and accents, while the left hand has a simple accompaniment. The dynamic is 'f' (forte). The key signature has one flat. The piece ends with a fermata over the final chord, marked with an asterisk (*).

♩ = 96 subito

dancing...

Musical score for measures 565-574. The score is written in 7/8 time. The tempo is marked 'subito' and 'dancing...'. The right hand features a lively, rhythmic melody with slurs and accents. The left hand has a simple accompaniment. The dynamic is 'f' (forte). The key signature has one flat. The piece ends with a fermata over the final chord. Below the score, there are markings for 'Ped.' (pedal) and 'mp' (mezzo-piano).

57⁵

Musical score for measures 57-58. The right hand features a complex melodic line with frequent five-finger chords (marked '5') and a trill in measure 58. The left hand has a triplet in measure 57 and a sustained bass line.

58⁵

Musical score for measures 58-59. The right hand continues with five-finger chords and a trill. The left hand has a triplet in measure 58 and a sustained bass line. Dynamics include *f* and *mf*.

59⁵

Musical score for measures 59-60. The right hand continues with five-finger chords and a trill. The left hand has a sustained bass line. Dynamics include *mp*, *p*, and *mp*.

60⁵

freely...

Musical score for measures 60-61. The right hand continues with five-finger chords and a trill. The left hand has a sustained bass line. Dynamics include *p* and *mp*.

615

suddenly still...
tenuto

tempo primo (♩ = 84 ca.), ma flessibile

625

* tails up = pull with right hand; tails down = pull with left hand

Note starting positions for bowing cords: clusters 1 and 2 start from the right-side; cluster 3 starts from the left side

64

right-side cords

66

gently... *p* *mf* *p* *mf*

freely...

child-like...

p *p*

68

left-side cords

l.h. timbre gradually dominating

molto *f*

mp *f* *f*

imperceptible entry... *pppp* *molto* *f*

p *f*

$\text{♩} = 88$

69 *mp* *calmly...*

rather aggressively... *f* *(mp)*

poco f sempre *(mp)*

70

Musical score for measures 70-71.5. The system consists of two staves. The upper staff is in treble clef with a 4/4 time signature. It features a melodic line with eighth-note triplets and slurs. The lower staff is in bass clef with a 4/4 time signature, containing a bass line with eighth-note triplets and slurs. Fingerings '3' and '5' are indicated above and below notes respectively. A dotted line with the number '8' is positioned below the bass staff.

71.5

Musical score for measures 71.5-72. The system consists of two staves. The upper staff is in treble clef with a 4/4 time signature. It features a melodic line with slurs and accents. The lower staff is in bass clef with a 4/4 time signature, containing a bass line with eighth-note triplets and slurs. Fingerings '5' and '8' are indicated. A dotted line with the number '8' is positioned below the bass staff.

72

right-side

Musical score for measures 72-74.5. The system consists of two staves. The upper staff is in treble clef with a 4/4 time signature. It features a melodic line with slurs, accents, and a 'right-side' marking. The lower staff is in bass clef with a 4/4 time signature, containing a bass line with slurs and accents. Fingerings '3', '5', and '8' are indicated. Dynamics include *f*, *mf*, and *mp*. A dotted line with the number '8' is positioned below the bass staff.

75

$\text{♩} = 84 \text{ ca. (flessibile)}$

Musical score for measures 75-77. The system consists of two staves. The upper staff is in treble clef with a 4/4 time signature. It features a melodic line with slurs, accents, and a 'short' marking. The lower staff is in bass clef with a 4/4 time signature, containing a bass line with slurs and accents. Fingerings '3', '5', and '8' are indicated. Dynamics include *f*, *ff*, and *mf*. A dotted line with the number '8' is positioned below the bass staff.