11.13.2015
HBS Session at EMAP Conference
Gabriele Cassone- *A Demonstration and Evaluation of Ancient Brass Instruments*
Data recorded by Chris Hasselbring

A few notes on the data:
Since Gabriele was getting to know the overtone series of each instrument while we were recording data, and there were variables not fully understood at the time of the demonstration, the exercise of recording the acoustic/musical properties of these instruments was probably less than ideal. Sometimes after recording several partials, often out of sequence, we asked him to repeat from low to high. We often got different readings on the second pass, which I wrote over the first set of numbers (not being prepared for this eventuality). These second readings could have been a result of Gabriele setting up his embouchure placement differently, or in a few cases, changing to a different mouthpiece. Specific mouthpiece identification was not possible except in the case of the Etruscan Cornu prototype, which he recorded with a copy of an Etruscan mouthpiece. Regarding the decibel readings, it became apparent that the placement of the meter is critical (the decibel level decreases at inverse square ratio to the distance from the sound source- so to have meaningful readings we would have had to create a more controlled environment. In each case measuring distance from the source to the meter) and there were probably other variables that effected our readings. However, the decibel readings next to the partial is given. Murray Campbell read decibel levels for more than one partial for a given instrument. As for most resonant partials, again, due to the variables (player, instrument, room, etc.,), I feel that the results are subjective. I have put the partials which I considered to be most resonant are in bold. Pitch names are given next to the Hz number. Slightly high pitches are marked with a + slightly low with a --. Where the pitch was closer to halfway between two notes, that is also indicated. While this exercise was not ideal given the numerous variables, it does present, for the first time, some pitch and dynamic capabilities for copies of a number of rarely played ancient brass instruments.

Instrument	Partials (Hz)		Decibels
Egyptian *Snb*	(193	G3 --)	
Tutankhamen	**484**	Bb4-B4	93
	783	G5	85
Etruscan *Cornu*	**260**	C4 --	90
(Short)	**526**	C5 +	92
Etruscan *Cornu*	150	D3-D#3	
(Long- prototype)	**236**	**Bb3 +**	96
	325	**E4 --**	
	481	Bb4-B4	
	560	Db5 +	
	647	Eb5-E5	

Cont…

Instrument	Partials (Hz)		Decibels
Boston *Salpinx*	186	F#3 +	72
	306	D4-D#4	
	406	G4-G#4	95
	483	F#4-G4	90
	588	D5+	
Cup-bell *Salpinx*	162	E3 --	83
	336	**Bb3 +**	
	517	C5--	96
	670	E5 +	
Tattershall Ferry	236	Bb3+	
Carnyx	357	F4-F#4	
	478	Bb4-B4	95
	614	**Eb5 --**	
	710	F5-F#5	
	837	Ab5+	
	902	A5-A#5	
Lituus of Tarquinia	222	A3+	85
	355	**F4 +**	
	464	Bb4--	
	550	C#5--	90
	665	E5 +	
	767	G5--	
	890	A5+	