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***Expressive gesture and style in Schubert song performance:
Examples of method of interpretation of performances***

The interpretation of the measured variations in tempo, dynamics, and pitch was based on the assumption that these variations show a systematic relationship to the performers' interpretations of the structure of the music. These expectations concerning the relationship between performance and aspects of the musical structure come from empirical studies of performances that aimed to explain the *position* of variations in performance parameters. Clarke (1988), Sloboda (1983) and Palmer (1997), among others, have emphasised that expressive variations can be seen as the result of performers' interpretations of music. The performer has a concept of the structure of music and generates expressive performances from this concept. Changes in concept will lead to changes in expressive performance. Palmer (1989), Todd (1992) and Clarke & Windsor (2000) have demonstrated this for phrase structure, and Sloboda (1983) for metrical structure. Sundberg and colleagues (Sundberg, 1988; Sundberg, Friberg and Frydén, 1989) proposed relationships with melodic contour, with melodic and harmonic charge (concepts related to melodic and harmonic tension), and with rhythmic attributes such as the alternation of long and short notes.

Although it may never be possible to infer from a performance what the performer's structural interpretation of the music was. It is possible to analyse the consistency in relationship between expressive variations and structural components of the music. A decomposition model as proposed by Desain & Honing (1997) and Penel, Desain, Maris & Windsor (1999) is proposed to do this. The assumption is that expressive variations related to different aspects of the music add up to form a compound expressive profile. When analysing this compound profile, it may be decomposed or dissected to its constituent parts using relevant descriptions of the structure of the music. The ability of the model to account for variations in performance parameters is a measure of the plausibility of the model. This ability varies with the relevance of the implemented structural descriptions and with the consistency of the relationships between variations in performance parameters and aspects of the music.

This literature predicts consistent relationships between aspects of the musical structure such as phrasing and meter and characteristics of the performances, specifically the location of modifications in tempo and dynamics. In addition, it suggests a method of analysis that may decompose measured variations in discrete components. Given the additionally observed relationship between expressive variations and intended emotion (Juslin, 2000; Shaffer, 1992; Sloboda & Lehmann, 2001), we may extend the decomposition model to include emotional character besides structural characteristics.

To account for the variations in vocal expression in the performances of Schubert songs, a decomposition model was defined that included a quantitative description of melodic contour, rhythm, melodic highpoints, meter, phrase endings, emotional activity, emotional valence, and tension. Each bar of a musical piece had a specific

level for each of these variables associated with it. The variations over bars in musical variables were fitted onto the variations in performance variables using multiple regression analyses. The resulting fit between predicted and observed variations is a measure of the success of the model.

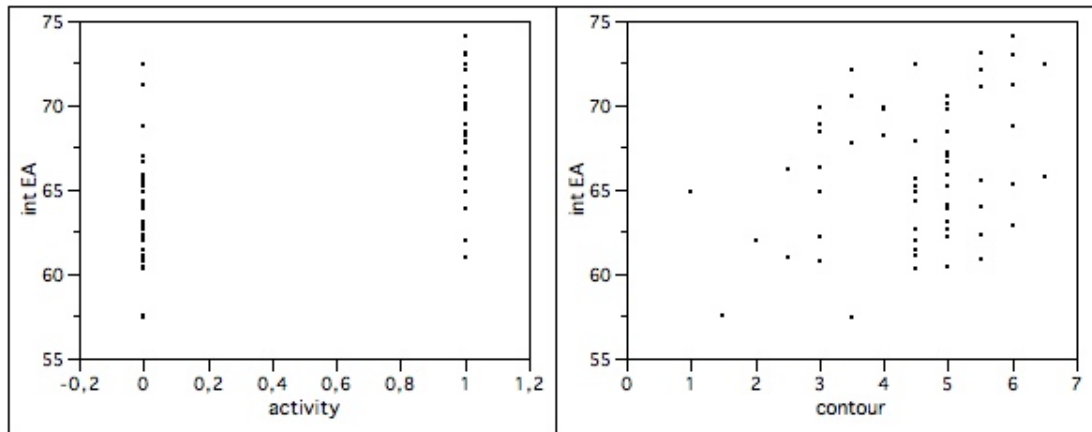


Figure 5 Variations in loudness per bar in the performance of *Die junge Nonne* by Elly Ameling are plotted against levels of emotional activity (left panel) and levels of melodic contour (right panel).

Table 1: Results of fit of multiple regression model for three performances of *Die junge Nonne*

Fit	IOI	Ampl	V Rate	V Ext	Up	Down
SS 1907	0.39	0.33	0.18	0.23	0.26	0.17
Contour		* (+)				
Rhythm		* (-)				
Highpoint						
Phrasing						
Valence	**** (+)					
Activity						
Tension	*** (+)					
LL 1941	0.49	0.70	0.62	0.61	0.29	0.15
Contour		**** (+)				
Rhythm	** (+)	** (+)	** (+)			
Highpoint						
Phrasing						
Valence	**** (+)	** (-)	* (-)	* (-)	*** (-)	
Activity	* (-)	*** (+)	** (+)	**** (+)		
Tension		* (-)				
EA 1975	0.25	0.73	0.47	0.74	0.48	0.09
Contour		**** (+)				
Rhythm		** (+)	**** (+)	*** (+)	* (+)	
Highpoint				* (+)		
Phrasing						
Valence	* (+)					
Activity		**** (+)		**** (+)	* (+)	
Tension						

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.0001$, **** $p < 0.0001$

An example is given in Figure 5. The left panel of the figure plots the relationship between emotional activity and loudness and the right panel of the figure plots the relationship between melodic contour and loudness. As can be seen, there is a clear linear relationship in both instances. To give a good account of variations in performed loudness, both aspects of the music are needed. Generally, performed

loudness tends to increase with melodic contour and emotional activity. For *Die junge Nonne*, loudness also tends to be relatively high for rhythmically dense passages. Table 1 shows the results of the model fit for three performances of *Die junge Nonne* (Susan Strong in 1907, Lotte Lehmann in 1941 and Elly Ameling in 1975). The stars indicate significance levels. The plus or minus indicate the direction of the effects (a performance variable increases or decreases with an increase in model variable). The number at the top of a column indicates the explained variance, which can vary between 0 and 1.

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