

The psychology of leitmotive processing in Richard Wagner's music

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The leitmotives in Richard Wagner's *Der Ring des Nibelungen* serve a range of compositional and psychological functions including creating musical structure and serving as mnemonic narrative devices for the listener. While there have been traditional musicological studies investigating the use and effect of different leitmotives in Wagner's compositional technique, the question of how they are processed in realtime by listeners with different levels of expertise remains very much unexplored. Work by Deliège (1992), Morimoto (2009), and Albrecht (2013) has investigated how listeners perceive leitmotives in realtime, though these studies employed paradigms exposing subjects to leitmotives before the listening. For realtime processing, both musical characteristics of the leitmotives, as well as prior knowledge and musical experience in general are assumed to be relevant factors.

The current study gathered data from a psychological experiment that required subjects (N=100) to listen to a 10 minute excerpt from *Siegfried* and then to perform a 10 minute memory task which measured both explicit and implicit memory for leitmotives. Subjects were also asked to make judgements about perceived emotional affect conveyed by each leitmotive. After the offline memory test, subjects selfreported their formal musical training, as well as their familiarity with Wagner and the *Ring*. Subjects also completed an objective knowledge test on the life and works of Wagner.

An item response theory (IRT) approach was used to estimate item difficulty parameters characterizing subject's ability to recognize leitmotives. In terms of listener expertise, ability parameters from the IRT model were regressed onto scores of musical training as well as Wagner expertise that was assessed via a selfreport inventory and an objective knowledge test. The objective Wagner knowledge score turned out to be the strongest and a significant predictor of leitmotive recognition in addition to selfreported Wagner familiarity and musical training. In terms of musical parameters, perceived arousal rating of the leitmotives did emerge as a significant predictor of recognition rate. This suggests that the effect of "Wagnerism" is a special form of musical competence that is not related to musical training, yet can affect perception in a significant way.

Keywords: Memory, Wagner, Leitmotive, Listener Background, Musicology

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