
Editorial: Introduction to the *Angel of Death* Project

THIS issue of *Music Perception* presents the results of an ambitious and unique interdisciplinary collaboration. The plan was to ask a well-known composer to work closely with a group of musicologists and psychologists. The composer would create a work that would be the subject of psychological experiments: Do listeners actually hear what the composer intended for them to hear (and what the musicologists thought they would hear)?

No small risk was involved on the part of the architects of this project. Composing is generally a solitary act, not subject to the scrutiny of outside onlookers. Yet the success of this project required that the composer share his notes, ideas, and thought processes. The scientists faced the intrinsic tension of losing control of important variables by allowing their experimental stimuli to be written outside the laboratory and by collecting many of the dependent measures in real time as the experimental participants attended a live concert of the composition.

The project began more than a decade ago with discussions between a cognitive psychologist, Stephen McAdams (himself a composer of instrumental and electronic music in the 1970s), and a Pulitzer Prize-winning composer, Roger Reynolds; a brief history is provided in the following Prolog by McAdams. A team of psychologists and musicologists was assembled, and then, following preliminary discussions among the team members, Reynolds wrote and orchestrated the main thematic materials for the piece he entitled *The Angel of Death* (Reynolds, 2001). The concept of the piece was based on his exploration of ideas surrounding the Etruscan belief that individuals had to negotiate their otherwise predestined lifespan with a divine messenger.

The process of composing the piece and the compositional strategies employed are described in the article by Reynolds that begins this issue, and some of the compositional problems that had to be solved were examined in an article by McAdams appearing in this journal two issues ago (McAdams, 2004). Reynolds's compositional method is described in detail in a monograph (Reynolds, 2002), which is reviewed by Nicholas Cook in this issue.

Piano and orchestral arrangements of the preliminary main thematic materials were recorded and presented to experimental participants. The

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results of these experiments are reported in the first three empirical papers in this issue: McAdams, Vieillard, Houix, and Reynolds describe the classification of thematic subsections in both instrumental versions; Poulin-Charronnat, Bigand, Lalitte, Madurell, Vieillard, and McAdams discuss the effects of instrumentation change on memorization of the musical materials; and Lalitte, Bigand, Poulin-Charronnat, McAdams, Delbé, and D'Adamo consider the perceptual structure of the themes. The information obtained in these experiments was given to Reynolds to use in finalizing the composition. During both the world premiere in Paris in 2001 and the North American premiere of *The Angel of Death* in 2002, audience members made real-time judgments about the music using continuous response devices, the results of which are reported by McAdams, Vines, Vieillard, Smith, and Reynolds.

To many, art and science seem to fall at opposite ends of a continuum. Readers of this journal, however, may tend toward seeing this continuum as *circular*, with the two meeting each other in a common middle. Martin Kemp (Oxford University art historian and *Nature* columnist) pointed out, when we told him of this project, that most artists describe their works as *experiments*—part of a series of efforts designed to address a common concern or to establish a viewpoint. W. F. Thompson (a scientist and a composer) noted recently (personal communication, 2004) that the work of scientists and artists share many features: both involve similar stages of development, beginning with creative and exploratory “brainstorming” periods, followed by testing and refining stages that typically involve the application of set procedures, but often informed by additional creative problem-solving. Artists’ studios and scientists’ laboratories are similar as well. Both typically contain a large number of projects in various stages of completion, both require specialized tools, and the results are—unlike the final plans for a suspension bridge, or the tallying of money in a cash register at the end of the business day—open to interpretation. What artists and scientists have in common, we believe, is the ability to live in this open-ended state of interpretation and reinterpretation of the products of our work.

The work of both artists and scientists is ultimately the pursuit of truth, and yet members of both camps understand that the nature of truth is that it is contextual, dependent on point of view, and that today’s truths become tomorrow’s disproven hypotheses or forgotten objets d’art. One need look no further than Piaget, Freud, Skinner, and Rosch to find theories that once held widespread currency and were later overturned or at least dramatically reevaluated. For the artist, the goal of the painting or musical composition is not to convey literal truth, but an aspect of a universal truth that if successful, will continue to move and to touch people even as contexts, societies, and cultures change.

Some may wonder about the generalizability of a project based on one composer and one musical piece. Numerous precedents in our field support the approach. For example, in *Music Perception*, 1996, Volume 13, Num-

ber 3, the results of an impressive collaboration were reported. Three music theorists—Eugene Narmour, Fred Lerdahl, and Robert Gjerdingen—and three psychologists—Jamshed Bharucha, Carol Krumhansl, and Caroline Palmer—provided an analysis of Mozart’s Piano Sonata in E \flat Major, K.282. Each article showed how the perspective of the author not only illuminated understanding of the piece but also led to powerful new directions and techniques toward understanding perceptual and affective structures. Other examples may be found in the special issue of *Musicae Scientiae*, 2003, Volume 7, Number 1; Nicholas Smith and Lola Cuddy in one article, and Diego Vega in another, used excerpts from one musical piece to examine relations between listeners’ judgments of musical tension and predictions arising from Lerdahl’s (2001) Tonal Pitch Space theory.

Two further points may be made here. First, the case-study of particular individuals in particular situations has historically advanced behavioral science. Consider the famous patient HM (Corkin, 1965; Milner, Corkin, & Teuber, 1968)—a patient whose medical history and brain lesions were so specific as to render true generalization to others virtually impossible. This fact, however, still did not compromise the value of what was learned about brain function. Second, the study of individual composers’ practices has been very helpful as a route toward understanding the creative process from a psychological perspective. As two examples, the letters of Beethoven and the diaries of Tchaikovsky have helped us to understand the composers’ motives. For instance, we learn from passages such as these that Beethoven, with only an eighth grade education, valued scholarship to such a degree that he read the complete works of Shakespeare and Goethe:

. . . without laying claim to any genuine learning, I yet accustomed myself from childhood onwards to grasp the spirit of the best and wisest of every age. Shame on the artist who does not consider it his duty to achieve at least so much. (Beethoven, 1809/1960)

Or from this note to himself:

In order to write true church music, look through all the church chorales of the monks, etc. to find out the most accurate translations of all the sections, also the perfect prosody of all the Christian and Catholic psalms and canticles . . . “ (Beethoven, 1818/1960)

We learn from Tchaikovsky that he *loathed* the Nutcracker Suite, finding it puerile, and yet, a clue to how he wrote something he found so saccharine appears in this entry from his diary:

Played *Manon* at home. Oh, how nauseating is Massenet!!! But what is most aggravating is that I feel a certain kinship with the *nausea*. (Tchaikovsky, 1890/1945)

Taken together, and with historical and musicological perspective, we can piece together a coherent story about composition. The present series of studies falls into this tradition of a diary study, with the additional and unprecedented benefit of having a number of quantitative measures rigorously collected in the process.

In his Epilog, Reynolds expresses the hope that psychologists and composers will begin to take increasingly bolder and more challenging steps toward collaboration with an aim to better understand music and musical behavior. If we assume that music is a form of communication (Gale, 1888; Meyer, 1956), it is important to understand the connection between a composer's intent and a listener's understanding. Reynolds expresses an urgent need for "a serious and broadly conceived examination of the relationship(s) between how composers make their music" and the actual experience that listeners report (this issue, p. 351). The authors of the empirical papers in this issue have adapted, manipulated, and in some cases invented laboratory tools to do just this.

All articles in this special issue were sent out for review using the normal peer review procedures for this journal. Many of the most esteemed and senior members of our research community volunteered to serve as anonymous reviewers for these articles, for which we are especially grateful.

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