

Ching-Hua Chuan

A Task Analysis of Music Composition and Its Application to the Development of Modalyser by Richard Polfreman

This paper introduces graphic interfaced software, Modalyser, that is used to assist composers to create music in a generic and natural fashion. To achieve this goal, Polfreman explored the process of composing as a task analysis, and proposed a generic task model for describing the nature, requirement, and environment of music composition. Based on the GTM and IRCAM's sound synthesis engine, the implementation of Modalyser is presented.

Before this paper, many software-based sound synthesis systems have been developed but share a common problem: the interface is not musician friendly and instead, requires a user's familiarity with programming or signal processing. To improve user-interface designs for music software, Polfreman took a method of task analysis, known as KAT/TKS, and applied it on music composition to produce a generic description of composing. The analysis was done through questionnaire, interviews with composers, and direct observation of composers at work.

The generic task model, GTM, presented how Polfreman analyzed the task of music composition. The model contains three sets of goals: design framework, research, and produce music. Design framework is the most important part of the process, involving a setting of possibilities under a set of constraints. The composition process starts at design methodology, formatting plans with a list of goals, and departs to one or more of the three subtasks: generation system, performance system, and design musical structure.

A generation system is a scheme for generating musical material at a level about instrument techniques, such as selecting notes under certain harmonic constraints. A performance system is responsible for producing sound given a music score, and it consists of three components: instrument, instrument technique, and performer. Design musical structure means the creation of the overall shape of the piece as well as the internal relationships between materials. The last part of the design framework is to design the overall format – the physical media and the information representation.

After accomplishing the goals of design framework, composers can move on to the sub goals of produce music, involving writing, checking, modifying, and formatting chunks (a defined segment of musical materials divided in a musically meaningful way). After formatting all the chunks, the music-producing task is finished and the composition task is generally finished too.

Before Modalyser was developed, Polfreman did a survey on composers and found out that most of them worked with acoustic technology, implying the importance of sound synthesis. A synthesis in Modalyser is divided into instruments and scores. Composers can construct a new instrument through a graphic object oriented interface or change the sound of it by modifying pitch, excitation, and timbre of the instrument. The score part of Modalyser provides a visualization of pitch and frequency spectrum for an instrument.

This paper proposes a generic model for music composition from a task analysis point of view. As Polfreman mentioned in the beginning of the paper, the model is not

aimed at characterizing the aesthetics of composing but presenting the tasks and environments involved in all kinds of compositions. I think the GTM model fulfills the author's expectation. I especially agree with Polfreman's motivation for the model: analyzing music composition as a task and building up a generic model which definitely help improve the user interface of composition software. However, it appears that the software Modalyser focuses more on the interface of sound synthesis, which is different from my expectation of traditional composition such as writing notes and motif.