

## Creative Thinking in Music: Advancing a Model<sup>1</sup>

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When the history of music education in North America is written many years from now, the time period represented by the end of the 20th century and the beginning of the new millennium might well be remembered as a critical point in the profession's history. It will be noted that practical, theoretical, and research-based writings focused attention on *both* product and process in the teaching and learning of music. In addition to the nurturing of fine solo and ensemble performances, a more comprehensive approach to music education is now emerging which embraces the study of composition, improvisation, music listening, cultural context, and relationships to other arts. In the United States, this trend began in the sixties with the Comprehensive Musicianship Project and the Manhattanville curriculum project and continued with the Yale, Tanglewood, and Ann Arbor symposia in following years<sup>3</sup>. In more recent times, the National Voluntary Standards in the Arts (1994) have come to mark a more comprehensive approach. In other countries such as the United Kingdom and Australia, attention to music composition and improvisation as curricula foci have been long established. It is clearly the case that no longer can a music teacher expect to be successful by only teaching children how to perform the music of others, paying little attention to the development of aesthetic decision-making and musical independence of students.

Within the scope of educational philosophy, constructionist views of teaching and learning prevail. Although not really new to educational theory with roots that can be traced to Piaget and Dewey, constructionistic thinking has been given focus in writings on school reform (Gardner, 1991, 1999). The basic goal of constructionism is to place emphasis on creativity and to motivate learning through activity. Learning is seen as more effective when approached as *situated in activity* rather than received passively (Kafai and Resnick, 1996). At the heart of these ideas is the shift away from thinking about education as begin centered solely in the mind of the teacher and more as partnership between teaching and student with the teacher as the major architect of learning. Project-centered learning is celebrated with students working to solve problems. Affect is seen as part of and as an aide in the learning experience. The teacher assumes more the role of a "guide on the side" as opposed to a "sage on the stage."

Another critical contextual issue in music education is the powerful presence of music technology as an aid to instruction and the support given to music teaching by Internet resources (Williams and Webster, 1999). Notation, sequencing, and digital audio software running on powerful, affordable

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<sup>3</sup> For a summary of these events, see Mark (1996).

personal computers provide important resources for music education practice and research. Specially written software packages designed to encourage composition and improvisation are now readily available for use in schools and at all levels of instruction. Internet resources serve as an increasing rich reservoir for teachers to challenge students to solve musical problems and to distribute and gather examples of creative products in music.

### Chapter Overview

It is in this context that I offer the ideas in this chapter. The work here is based on my analysis of recent research on the topic of creative thinking in music for students in primary, secondary, and tertiary education since my review of this literature earlier (Webster, 1992). A central mission of this chapter will be to present a more advanced model of creative thinking in music based on this and the contextual issues noted above. I will begin with why the understanding of creative thinking is so important for music and specifically for music education. I will do this by listing certain basic tenants about music, relating them to the educational climate today.

Next I will move to the research base with a short account of the study of “creativity” in the general psychology literature, focusing on the last five decades. This is a rich and complex literature and I have space only to summarize the major categories of research in order to demonstrate its importance for the conceptual model. I will follow this with a review of some of the most important music research in the last five years.

In the concluding sections, I will summarize traditional aspects of a definition of “creativity” and suggest one of my own that is drawn from theoretical and empirical work. I will present my revised model here and offer comment on its newer features. The chapter ends with some speculation about future studies.

### Importance of Musical Creativity for Music Education

It is necessary to remind ourselves of why this whole topic is so important for our field. “Music education” in its broadest sense is a sub-field of music ultimately concerned with the most effective teaching and learning of music as art. Most musicians today teach; and, as a result, are music educators. However, the term “music education” has come to mean the application of teaching and learning techniques to primary and secondary school children. I want to make it clear, however, that concepts developed here about creativeness and music education are applicable to the wider context than just the

teaching of music to the young. The musicologist, theorist, studio teacher, conductor—these professionals are all in this together.

At the risk of stating the obvious, there are three fundamental ways that humans engage in musical behavior: (1) listening (by far the most common of behaviors and the absolutely least studied as a creative experience), (2) composition (perhaps the least common, but most studied), and (3) performance. Listening exists as a focused experience with repeated listenings, often resulting in a formal analysis that might be represented in some symbol system; or, more often, listening is a single-time, “in the moment” experience in which the listener forms a sense of the music without the goal of a formal analysis. Performance is also of two types. One type is the reproduction of music written by others and the other is the creation of music “in the moment” within a context—often referred to as “improvisation.” Although there are settings where teaching and learning is focused primarily on one or the other, each behavior is mutually supportive of the other in our quest as music educators to teach about music. Good music teaching usually involves all these types of behaviors.

Music teachers design environments that help learners construct their personal understanding of music. There are thousands of ways to do this and our authentic assessment of learning is the gauge of our success. One obvious gauge of how successful we are as teachers is the extent to which our students can make aesthetic decisions about music as listeners, composers, and performer/improvisers and to develop a sense of musical independence. Such independent thinking does not happen if each decision is dictated. Teachers must teach for independent thought. The best music teachers are the ones that are not needed by the student when formal education has ended.

Most music teachers agree that student decision-making (perhaps all of “musicianship”) is predicated on the ability to hear musical possibilities without the actual presence of the sound—being able to “think in sound.” Active listeners need to hold musical structures in memory as a work unfolds. Composers need to imagine sound combinations. Performers/improvisers must have a target performance in mind. Music teachers must help students gain this ability to hear music in their heads and manipulate these sounds in increasingly more abstract ways.

All of this is possible only if students are encouraged to “create” music through all the available behaviors. Some will be more successful with one type of behavior over another, but each is critical for the development of music cognition in the grandest sense. For all these reasons, it makes sense to think of creative experience in music as a central focus of music education.

## General Literature

J. Paul Guilford's 1950 keynote address to the American Psychological Association (Guilford, 1950) is a marker for the commencement of the modern-day study of this topic. In the address, he noted the lack of attention paid to divergent thinking<sup>4</sup> and called for more systematic study. His work would evolve into the formation of a factor-of-intellect model of human intelligence that celebrated the intersection of product, operations and content (Guilford, 1967). His subsequent factor analytic studies brought attention in psychology to a multiple intelligence theory that was meaningful. The specific model proposed came under fire by the research community due to the problems inherent in factor analysis as an empirical methodology (Sternberg, 1999), but the spirit and logic behind Guilford's work lives on in many guises.

Since that time, the growth of formal study of creativity has been slow, at least until most recently. There are two edited volumes published in the last few years that are excellent compilations on the subject of creativity. The first is by Finke, Ward, and Smith (1996), published by MIT Press. The book has fourteen chapters aimed at offering a contemporary view of creativity in a cognition context. Topics such as insight, problem-solving, memory, and incubation are included, as well as an interesting opening chapter by the editors on cognitive processes in creative contexts. There is also attention paid to machine intelligence and on connectionism and neural nets.

A more recent collection of writings was published by Cambridge University Press, edited by Sternberg (1999). This volume is perhaps the most comprehensive and definitive, single volume in the field of creativity and contains 22 chapters written by many notable scholars in the field today. Authors include Gardner, Csikszentmihalyi, Feldman, Weisberg, Amabile, Runco, Simonton, and Gruber, among others. The book is important because it documents the recent upturn in interest among cognitive psychologists in the study of this difficult topic.

There are now two major journals devoted to the topic, *Journal of Creative Behavior* and the *Creativity Research Journal*. Two books on adult creativity, designed for the trade press, have been

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<sup>4</sup> The concepts of "divergent" and "convergent" thinking are at the heart of much of my writing and thinking about creativeness. Divergent thinking is simply that kind of thinking for which the result has no single goal and a number of products may result—a kind of personal brainstorming. Convergent thinking is work that focuses on a final result. Creative work involves both kinds of thinking many times and in many complex ways.

written—one by Gardner (1997) and the other by Csikszentmihalyi (1997)—and each applies recent work to the explanation of genius.

Despite these developments, creativity as a construct (or as a set of complicated constructs) has been avoided in modern psychology. Sternberg and Lubart (Sternberg, 1999) offer six possible reasons:

- mystic and spiritual roots of this topic which tends to put off the more scientific community
- its pragmatic, commercial nature exploited by those who offer popular accounts of the creative thinking process which are not based on theory and research
- early work on the subject that was not theoretically or methodologically central to the field of psychology, and, as such, not respected
- problems with definition and criteria that “put off” the research who is looking for easier and perhaps more conceptually understood topics for tenure and promotion committees to understand
- approaches that have view creativity as an extraordinary part of an ordinary thing so as not to really need separate study, and
- unidisciplinary approaches to creativity that have tended to view a part of creativity as the whole phenomenon, trivializing or marginalizing the study. (p. 4)

As a musician, I would add a seventh reason and that is the sheer nature of the music experience seems to defy analysis. The study of creativity in music involves a complex combination of cognitive and affective variables, often executed at the highest levels of human thinking and feeling. It is further complicated by our inability to clarify from where the inspiration for creative ideas comes. Then, on top of that, there is little evidence about the development of these ideas to form a finished whole. This is such a complicated set of either long-term engagements (composition, repeated music listening, or decisions about previously composed music in performance) or “in the moment” engagements (improvisation and one-time listening), that only those professionals in the creative field with deep understanding of music have any hope of untangling the complexity.

Those researchers in general psychology that have been brave or inspired enough to deconstruct the general creative experience through empirical study have taken the following approaches (Mayer, 1999)<sup>5</sup>:

- *Psychometric*. Assessment work aimed at the creation of tools to measure specific traits or evaluate overall creative ability (Guilford, Torrance, McKinnon)
- *Experimental*. Traditional empirical paradigms designed to seek cause and effect relationships (Sternberg & Davidson, Collins & Amabile)
- *Biographical*. Studies that use historical data to understand the creative process and creative thinking (Wallace and Gruber, Gardner, Simonton)
- *Psychodynamic*. Writings based on clinical evidence and philosophical/psychological speculation about creativeness (Freud, Kris, Kubie)
- *Biological*. Data derived from physiological data (Martindale & Hines, Hudspith)
- *Computational*. Conceptual work based on mathematical and computer-based models and simulations (Boden, Shank)
- *Contextual*. More qualitative work based on the realities of social context (Csikszentmihalyi)

Each approach has strengths and inherent weakness. Selected reading of studies in each approach is highly recommended to gain a sense of the contemporary scene in the general literature. In designing a model of creative thinking in music, this literature helps to bolster the aspects of enabling conditions (both personal and culturally-based) and enabling skills (personal competence) that are so critical for creative thought. Much of this literature, too, underscores the vital importance of divergency of thought and imagination in context with the more convergent thinking that often involves just plain hard work.

#### Promising New Research in Music Teaching and Learning

When comparing the approaches in the general literature to music on this topic, the psychometric, experimental, and contextual approaches are noticeable. A more “descriptive” approach is emerging in music, too, which places emphasis on the content analyses of the creative music experiences themselves. Ten years ago, I published a review of the literature on creative thinking in music education (Webster, 1992). I have continued to maintain an annotated bibliography that attempts to cover the field of music

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<sup>5</sup> See the Mayer source for a more detailed description of each approach and for references to the scholar’s work whose names appear in this listing.

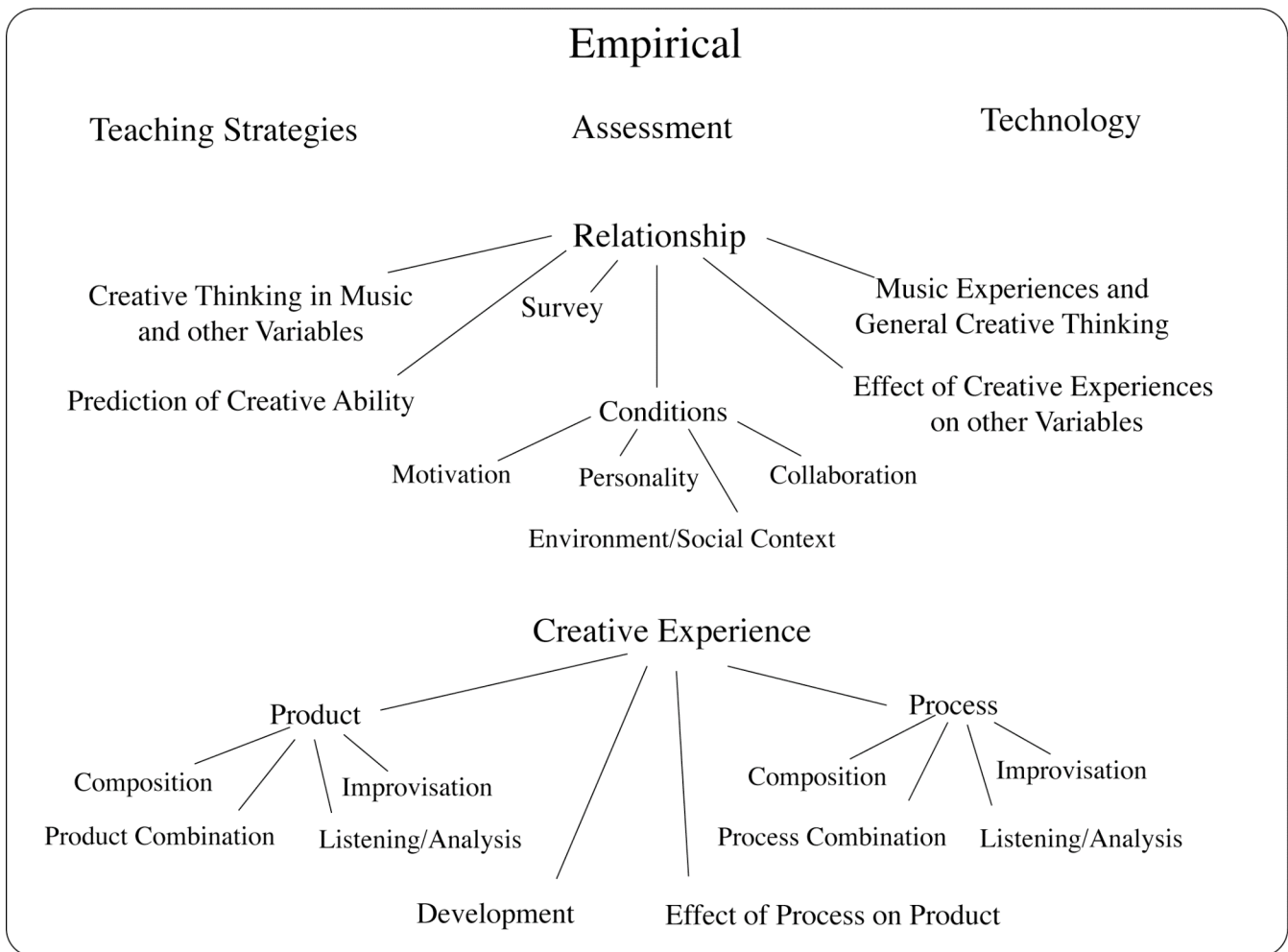
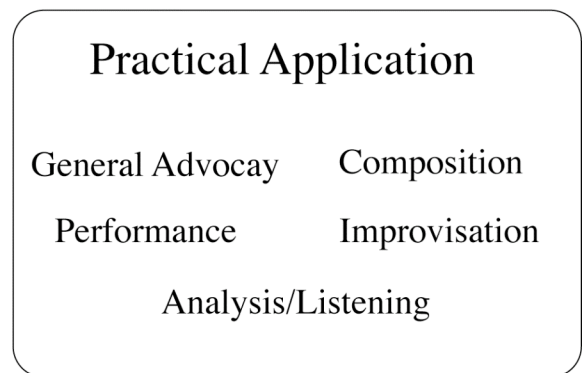
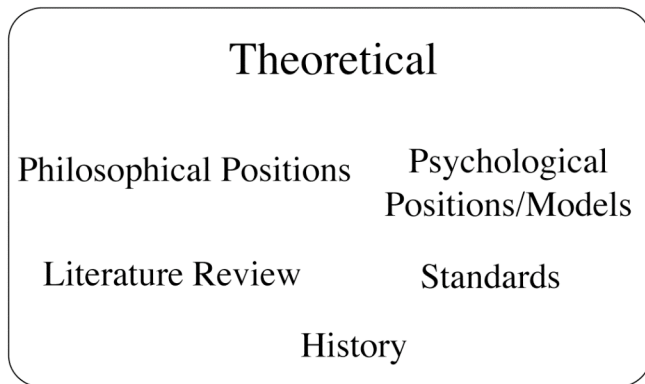
teaching and learning.<sup>6</sup> The latest organizational model for this literature is provided in Figure 1 and includes studies organized in three major categories: (1) *theoretical*, works based on philosophical or psychological arguments as well as review, standards and historical writings; (2) *practical application*, literature designed to inform praxis but not derived fundamentally from empirical evidence; and (3) *empirical*, work from numerical or observational data. This empirical category is the most complex, with studies that examine teaching strategies, assessment design, technology, relationship between variables in and outside music, and the actual creative experience. The Conditions category within Relationship is a major recent trend, with work on collaboration and social context as most important. Work with technology and teaching strategies is growing quickly as well.

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<sup>6</sup> For an overview of the literature in music and the most recent annotated bibliography, consult the following website resource: <http://pubweb.northwestern.edu/~webster/creathtink.html>



Figure 1 Overall Literature Model



The early literature model (1992) was based on less than 200 writings. The current review of this literature is based on an annotated bibliography over twice the size with much of the newly published sources coming from the empirical and practical categories.

There are a number of trends that can be seen in the literature in the last 10 years. Here is a summary of the major developments noted in this new literature:

- Far wider array of methodologies, especially qualitative approaches
- Adoption of the post-modern tendency to question the assumptions made by previous generations and to be concerned more completely with social context. Many scholars have questioned older theories and models. (Barrett, Hargreaves, Burnard<sup>7</sup>)
- Heighten interest in the young child's work with invented music notation and the child's discussion of the notation as a window to understanding knowledge (Barrett, Gromko, MacGregor)
- New approaches to assessment, including (1) consensual techniques (Hickey), (2) peer assessment (Freed-Garrod), and (3) novice evaluation (Mellor)
- Attention to the role of collaboration (Kashub, Wiggins, MacDonald/Miell)
- New speculation and experimentation on the role of music technology (Hickey, Stauffer, Ellis)
- Emergent thinking on the pedagogy of composition teaching (Odam)
- New work on cause/effect and relationship (Auh, Hagen, Fung)
- New work on compositional strategies (Auh, Folkestad)
- Thought processes, using protocol analysis, while composing (Younker/Smith, Kennedy)
- New studies on how various musical behaviors (composition/improvisation/listening) relate to one another (Swanwick/Franca, Savage/Challis)
- Study of developmental patterns of creative thinking (Marsh, Barrett, Younker, Swanwick)
- Creative thinking in performance, aided by technology (Dalgarno)
- Study of improvisation and composition as connected experiences (Burnard, Hamilton, Wiggins)

#### What is Creative Thinking in Music and What is its Process?

The recent study of creative thinking and the whole notion of creativeness, both in and outside of music, have developed strong momentum in education circles and much new information is now

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<sup>7</sup> For reference to this literature, see the annotated bibliography noted earlier.

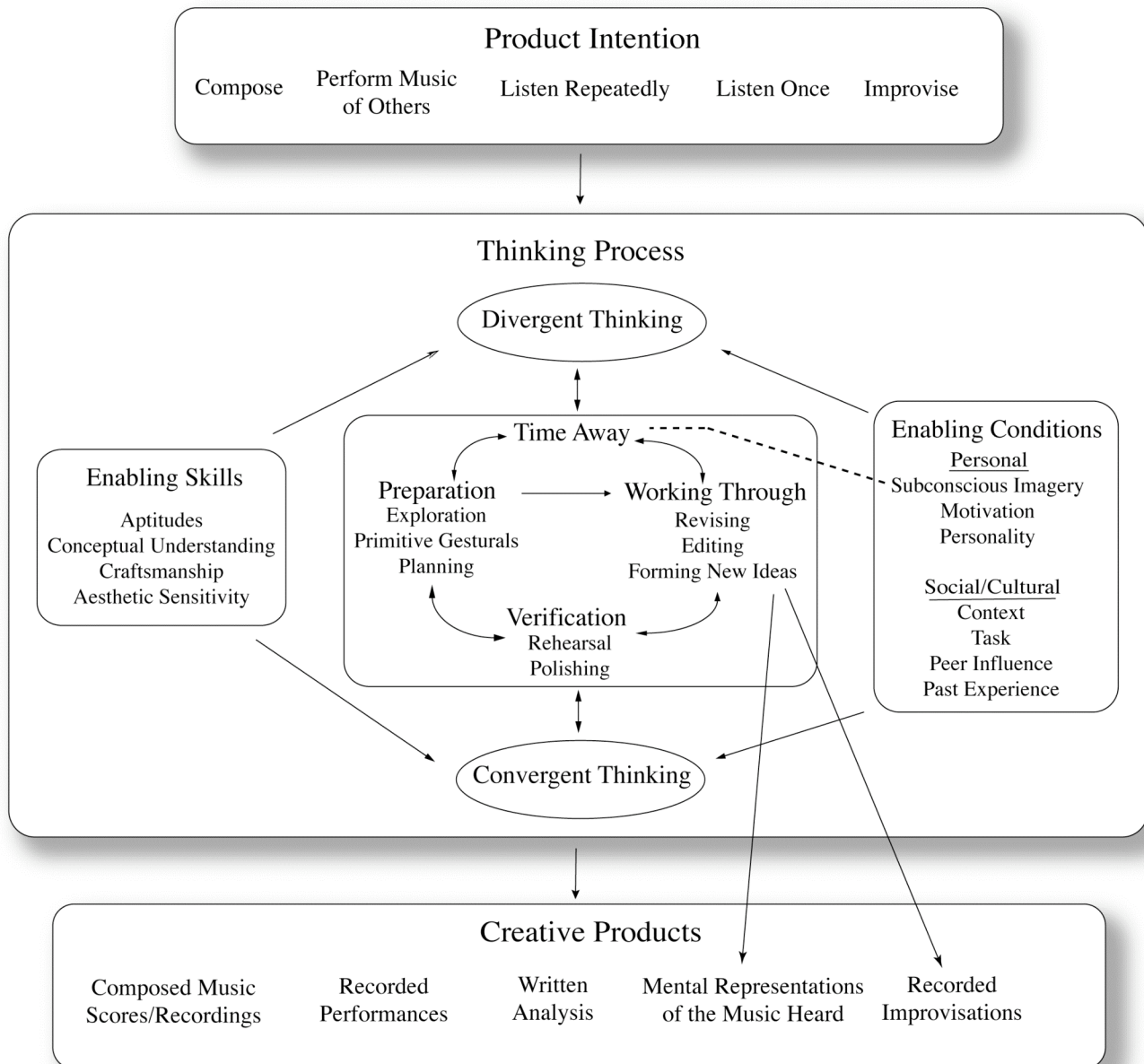
available. In this section, I draw from this and earlier work in order to help define what we really mean by creativity and its process in music.

For many years I have maintained that “creative thinking” is really a term that has its base in what most of us understand to be “creativity.” “Creativity” is not a useful term because it is so misused. For example, Mom and Dad may marvel at the “creativity” of their five-year-old daughter Maria because she can “read” music. Uncle John might think Maria has “creativity” for music because she can draw perfectly proportioned quarter notes on a drawing pad. Maria’s piano teacher might conclude (perhaps mistakenly) that Maria exhibits “creativity” for music because of the flawless performance of her recital piece on Sunday afternoon. Each of these achievements may be impressive and of great importance to the musical development of Maria, but **none** of them inherently has anything to do with what creativity in music really is: *the engagement of the mind in the active, structured process of thinking in sound for the purpose of producing some product that is new for the creator*. This is clearly a thought process and we are challenged, as educators, to better understand how the mind works in such matters—hence the term “creative thinking.” (Webster, 1990)

Based on this working definition, I continue to believe that creative thinking is a dynamic process of alternation between convergent and divergent thinking, moving in stages over time, enabled by certain skills (both innate and learned), and by certain conditions, all resulting in a final product. Nothing in the newest literature has suggested to me anything different. I believe that creative thinking is not a mysterious process that is based on divine inspiration or reserved only for those who are labeled as “gifted” or “genius.” It can be defined and identified in us all. Creative thinking also occurs at various levels, from the spontaneous songs of the very young child to the products of the greatest minds in music.

Over the years, I have tried to maintain a model of creative thinking process that has anchored my assessment work and my conceptual writing. The early model was first published in 1987 (Webster, 1987). Figure 2 presents a new version of this model based on newer literature both in and outside of music.

Figure 2 Model of Creative Thinking Process in Music



### What Remains

The basic design of the model remains the same. Continued review of definitions of creativeness in both the general and music literature reveals five common elements: (1) a problem solving context, (2) convergent and divergent thinking skills, (3) stages in the thinking process, (4) some aspect of novelty, and (5) usefulness of the resulting product. Regardless of the discipline, most experts agree that creative thinking is driven by a problem and a need for its solution. In the arts, the problem is more

a “force” in the creator that inspires or drives the creative spirit. In music, the response to this force is embodied in (a) composition, (b) performance/improvisation and (c) listening and analysis. These are the product intentions that drive the process itself and are the resulting products that come from creative thinking.

In moving from the product intention to the result, the thinking process is a constant interplay between two qualitatively different ways of thinking. Divergent thinking on the part of the music creator involves imaginative thought. Here the creator is exploring the many possibilities of music expression, always cataloging, sifting through, rejecting, accepting only to change yet again. Small kernels of musical thought, which might be a melodic or rhythmic phrase, a harmony, a timbre, or even longer and more complex patterns of music, are all imagined and possibly realized on some musical instrument. These primitive gesturals (PGs) are all part of the exploration process that often characterizes the opening periods of creative thought. Such thinking is largely divergent in nature. Of course, such thinking occurs all through the creative experience as ideas are refined, then rejected, and new periods of divergency occur.

All of this is cast against convergent thinking that is more linear and more analytical. Here, the aesthetic decisions are made and the gesturals are turned into entities that are far from primitive. The thinking in this case is more discriminatory and driven by an emerging plan that may be conscious or subconscious. Musical material is rejected or celebrated, manipulated and fine-tuned. This kind of thinking might logically occur closer to the end of the creative process, but not always. The interplay between divergent and convergent thinking is almost magical in scope and is at the center of creative thinking.

This movement between divergent and convergent thinking is aided by enabling conditions that are largely outside of the influence of formal education. Equally important are sets of enabling skills that are more likely influenced by formal education. Conditions and skills work to enable both the convergent and divergent thoughts and help to drive each.

Finally, I have continued to maintain that the results of the creative thinking process must always be represented by some form of product. This separates real creative thinking from day-dreaming or fantasy. Musical products take the form of written compositions, performances of music both pre-composed and improvised and analyses both written and mentally represented during listening.

What is New

*“In the moment” vs. Reflective Thought.* One new aspect of the model is my attempt to account for the “in the moment” creativeness that occurs in improvisation and single-time, music listening. Composition, performance of previously written music, and music analysis resulting from repeated listening are all time-independent. The creative processes have the benefit of “time away.” Improvisation and single-time listening unfolds in fixed time and the creative thinking is part of a flow of musical behavior that does not benefit from reflection to the extent that the others do. For this reason, I have tried to be specific about the differences between the two types of listening and between composition and improvisation in terms of their representation as intentions and products.

This unfolds more completely in the center of the model and the depiction of stages. Here, I have added a line of movement from Preparation to Working Through and then lines that move from Working Through directly to the products. What I mean by this is that creators, during improvisation and single-time listening, form explorative ideas, work through them, and then move directly to product.

*Model Center.* The reader familiar with my last model might be startled to see that I no longer use the traditional notion of “preparation, incubation, illumination, verification” that grew from my endorsement of the Wallas model created some years ago (Wallas, 1926). I still am quite sure that stages operate in the creative process and have retained the notions of preparation, verification, and incubation (though I have renamed this “Time Away” which seems to make more conceptual sense to me). I have come to believe that illumination is not as much a stage as a qualitative event that occurs many times in the creative process. I also feel that the notion of verification is best reserved for the final polishing stage of the creative processes that are more reflective in nature. The idea of “Working Through” is attractive because it functions both in terms of reflective thinking and “in the moment” thinking. It is this stage, too, that likely occupies the greatest percentage of creative time and is the most indicative of convergent/divergent thinking in combination. This idea awaits further data analysis, as do many of the aspects of the model.

Note too the use of a circular motion in terms of these stages and the indication with double-headed arrows that the movement is often clockwise and counter-clockwise as the creator progresses in a non-linear way through the process. I have retained a link from the “Time Away” stage to the Subconscious Imagery personal, enabling condition. This awaits more scientific verification as we learn more about brain function.

*Expanded Enabling Conditions.* Because of the mounting evidence on the role of social context, I felt it was necessary to stress this effect set. The kind of task and the context in which the task is set can have a strong effect on creative thinking. The roles of peer interaction in collaborative settings and in past experience all play a role as well. As we learn more about creativeness in and outside of school settings, I feel certain that this list will grow and become more specific.

*Product Clarity.* Finally, I have tried to be more specific about the kinds of products that result from creative thinking. This may seem trivial to some, but my intent was to be more clear on just what objects are the focus of study when we decide to pursue the study of creative thinking from a product perspective.

### Future Issues

This is such an exciting field of research. It remains full of tremendous difficulties and raises the ire of many scholars whose work is perhaps rooted in a more focused and controllable world. Be that as it may, we have never known more about this critical aspect of music teaching and learning and the future looks bright. I end with just a few of the future directions for music teaching that we should consider:

- We need more work on social context, particularly the role of popular music to frame compositional and improvisational work. Clearly certain popular idioms that are easy to grasp play a dominant role as entry points for compositional and improvisational thinking, but what is less clear is the path toward more sophisticated skills.
- We need to study the revision process and how it functions in the teaching context. We need to learn how to go beyond the primitive gesturals to encourage kids to think in sound at a more sophisticated level.
- Related to this are the issues of teacher control: when do we step in to change something or suggest a new path.
- Experimentation with open-ended vs. more closed-ended tasks for creative teaching and research deserves more study
- Experimental validity is an issue. How can we make the actual collection of data more realistic and deal more directly with the time constraints and contexts of “school” vs. out of school.
- When do children start composing music with “meaning.” After age 9, or long before? What does it mean to compose with “meaning?”
- When we ask children to compose or improvise or listen or perform “in school,” is the result different than if these behaviors were done out of school?
- When children compose, are they working from a holistic perspective or are then working locally without a plan?
- Is it fair or correct to evaluate the quality of children’s creative work with the eyes of adults?
- Are there stages of creative development in children?
- Is it really possible to study and define creative listening?

These and hundreds of other questions remain.



## References

- Csikszentmihalyi, M. (1997). *Creativity: Flow and the psychology of discovery and invention*. New York: Harper Collins.
- Finke, R., Ward, T., & Smith, S. (1996). *Creative cognition: Theory, research, and applications*. Cambridge, MA: MIT Press.
- Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach*. New York: Basic Books.
- Gardner, H. (1997). *Extraordinary minds: Portraits of exceptional individuals and an examination of our extraordinariness*. New York: Basic Books.
- Gardner, H. (1999). *The disciplined mind : What all students should understand*. New York: Simon & Schuster.
- Guilford, J. (1950). Creativity. *American Psychologist*. 5, 444-454.
- Guilford, J. (1967). *The nature of human intelligence*. New York: McGraw-Hill.
- Kafai, Y., & Resnick, M. (Eds.). (1996). *Constructionism in practice: Designing, thinking, and learning in a digital world*. Mahwah, NJ: Lawrence Erlbaum.
- Mark, M. (1996). *Contemporary music education*, (3<sup>rd</sup> ed.) New York: Schirmer Books.
- Mayer, R. (1999). Fifty years of creativity research. In: Sternberg, R. (ed.). *Handbook of creativity*. New York: Cambridge University Press., 449-460.
- National Standards for Arts Education*. (1994) Reston, VA: Music Educators National Conference.

Sternberg, R. (1999). *Handbook of creativity*. New York: Cambridge University Press.

Sternberg, R. & Lubart, T. (1999) The concept of creativity: Prospects and paradigms. In: Sternberg, R. (ed.). *Handbook of creativity*. New York: Cambridge University Press., 3-15.

Wallas, G. (1926). *The art of thought*. New York: Harcourt, Brace.

Webster, P. (1990). Creativity as creative thinking. *Music Educators Journal*, 76 (9), 22-28.

Webster, P. (1987). Conceptual bases for creative thinking in music. In Peery, J., Peery, I. & Draper, T. (Eds). *Music and child development*, (pp. 158-174). New York: Springer-Verlag.

Webster, P. (1992). Research on creative thinking in music: The assessment literature. in R. Colwell (ed.), *Handbook of research on music teaching and learning*, 266-279. New York, Schirmer Books.

Williams, D., & Webster, P. (1999). *Experiencing music technology*. (2<sup>nd</sup> ed.). New York: Schirmer Books.