

Conceptual blending, creativity, and music

Musicae Scientiae

2018, Vol. 22(1) 6–23

© The Author(s) 2017

Reprints and permissions:

sagepub.co.uk/journalsPermissions.nav

DOI: 10.1177/1029864917712783

journals.sagepub.com/home/msx**Lawrence M. Zbikowski**

University of Chicago, USA

Abstract

This article explores the use of conceptual blending theory for the study of creativity, especially as creativity is manifested in musical utterances. The first part of the article offers an overview of blending theory and describes two aspects of the theory that present challenges to the study of creativity in general, and to music in particular. The second part of the article offers an application of blending theory to Dido's lament from Henry Purcell's *Dido and Aeneas*, with an emphasis on the ways concepts prompted by language and music blend together to create a rich, and highly creative, world for the imagination.

Keywords

analogy, conceptual blending, creativity, metaphor, music analysis, Purcell, song analysis

Creativity is a famously elusive subject, and never more so than when dealing with the ephemeral and seemingly immaterial facts of musical sound. One resource for exploring musical creativity that has recently attracted attention, in part because it provides tools for dealing with both the commonplace and the exceptional in music, is research on conceptual blending. The notion that concepts from two disparate domains can be blended together to create new concepts has proven quite productive for the study of language and – more generally – the process of conceptual blending has been proposed as a basic mechanism of human thought (Fauconnier & Turner, 2002). Although early on the theory was used to study combinations of concepts activated by the music and words of 19th-century Lieder (Zbikowski, 1999), the focus of that work was not on creativity as such but on the processes through which concepts drawn from two very different domains (music and language) could give rise to unique forms of knowledge that combined elements from both music and language. More recently, however, the theory of conceptual blending has been used as the basis for computational models of creative processes in contexts that extend to musical practice (Cambouropoulos, Kaliakatsos-Papakostas, & Tsougras, 2015; Coessens, 2013; Sambre, 2013; Schorlemmer et al., 2014), suggesting not only the applicability of blending theory to the study of creativity but also ways that it might be implemented computationally.

Corresponding author:

Lawrence M. Zbikowski, Department of Music, University of Chicago, 1010 E. 59th Street, Chicago, IL 60637, USA.

Email: larry@uchicago.edu

As might be expected of a theory focused on a process construed as basic to human thought, the claims of conceptual blending theory are quite broad, such that Mark Turner (2014) recently proposed that blending undergirds the cognitive capacities that distinguish humans from other species. My aims here are more modest and are limited to exploring features of the theory that may be of interest to those studying musical creativity. As a way to lay the groundwork for my discussion, I shall begin with an account of blending theory focused on the basic model for blending, using an example in which music makes only a cameo appearance. This sketch will point to two aspects of the theory that could reshape how we think about creative processes in general and musical creativity in particular. In the second main section that follows I shall offer an analysis of the well-known lament that concludes Henry Purcell's *Dido and Aeneas*. Although the approach I take will be familiar from my earlier work (in particular, as presented in Zbikowski, 2002) my analysis here will expand that approach in ways that are directly relevant to recent work by other researchers on conceptual blending in musical contexts.

Conceptual blending, conceptual integration networks, and creativity

The Lieberson-as-Dido blend

As an introduction to the process of conceptual blending, let us imagine a situation in which the American mezzo-soprano Lorraine Hunt Lieberson plays the role of Dido in a production of Henry Purcell's late 17th-century opera *Dido and Aeneas*. Although Lieberson did perform the part for a 1998 performance of Mark Morris's danced version of the opera, the singers for that production were placed in the orchestra pit and did not take part in the staging; Lieberson also sang the role in a 1993 recording conducted by Nicholas McGegan, but it does not appear that this production was ever staged. For my purposes, however, the matter of whether there was ever a fully-staged production of the opera with Lieberson in the role of Dido is somewhat beside the point: I am more interested here in the act of imagining her in the role, for this act of the imagination exemplifies the process of conceptual blending.

This process begins with two compact, transitory cognitive constructs that the linguist Gilles Fauconnier called *mental spaces* (Fauconnier, 1994, 1997). The first mental space is set up by the words "the American mezzo-soprano Lorraine Hunt Lieberson." If you have detailed knowledge of Lieberson this mental space may be furnished by images of her face, the distinctive sound of her voice, and informed by recollections of her memorable performances. However, it could also be that you have never heard of Lieberson, in which case the mental space would be rather more sparse and built up around relatively generic ideas related to "American," "mezzo-soprano," and facts relevant to women singers. The second mental space would be set up by "the role of Dido in a production of Henry Purcell's late 17th-century opera *Dido and Aeneas*." Again, this mental space might be built up from detailed knowledge, which in this case would allow you to furnish it with a wide range of facts about the opera and the role of Dido within it, perhaps extending to fragmentary memories of Purcell's music. It could also be the case, however, that you have only general knowledge about late 17th-century opera, knowledge that allows you to furnish the mental space with facts about people singing in English and playing classically-inspired roles and little else. However they might be constructed, the correlation of these mental spaces brought about through imagining Lieberson in the role of Dido gives rise to a third mental space in which concepts from the first two spaces are blended together. Within this space, Lieberson has been transformed into a singer performing the role of Dido in Purcell's

opera. Accordingly, Dido now has a face and a voice – Lieberson’s face and voice (or that of a generic American mezzo-soprano) – and Lieberson has become a performer whose task is to bring the character to life on the stage.

As a way to study conceptual blends like this, Fauconnier, together with the rhetorician Mark Turner, developed the notion of *conceptual integration networks* (CINs) which, as diagrammed in Figure 1, involve four interconnected mental spaces (Turner & Fauconnier, 1995; Fauconnier & Turner, 1998, 2002). In the case of the blend associated with our imaginary production of Purcell’s opera, the first two of these (known as the input spaces) are those associated with Lieberson (the singer) and Dido (the character). The correlation of these two spaces sets up a third space – the Lieberson-as-Dido blend – but also activates a fourth space, the generic space. The idea of such a space draws on work on analogy done by Mary Gick and Keith Holyoak, who noted that individuals using analogies to solve problems were most successful if they could discover an abstract core idea, or schema, that was shared between the source domain (which offered the means to solve the problem) and the target domain (to which the problem belonged) (Gick & Holyoak, 1983). The generic space is roughly equivalent to this sort of induced schema: it captures the core cross-space mappings that obtain between the various spaces in the CIN and defines the basic topography for the network. For the Lieberson-as-Dido blend I have proposed that the generic space involves attributes associated with the concept “woman.”

Before proceeding – and in anticipation of some of the points I will want to make about musical knowledge – I would like to explore just a bit further the conceptual knowledge I see as relevant to the generic space of the CIN illustrated in Figure 1. Within the framework for conceptual elaboration illustrated by that diagram I regard the concept “woman” to be equivalent to a basic-level category (Rosch, 1999, pp. 191–196; Zbikowski, 2002, pp. 31–36). Categories of this sort represent a compromise between highly specific classifications (such as “Dido, Queen of Carthage”) and broad, comprehensive classifications (such as “primate”), a strategy that makes readily available the core features of a concept without encumbering communication with unnecessary details. As such, the category “woman” captures salient features of both “Lorraine Hunt Lieberson” (a real person) and “Dido” (a fictional character) without, however, necessarily shaping how those features will be combined in a conceptual blend. The basic-level category “woman” is thus certainly generic – indeed, therein lies its utility – but this is not to say that it is abstract in the strongest sense. Such categories are instead informed by countless encounters with potential exemplars, a process that for most starts in the early months of our life and continues throughout our lives.¹ It also bears mention that the apparent simplicity of the concept (or basic-level category) “woman” highlights an important aspect of mental spaces, which is the ease with which, given only a few prompts, we construct and furnish such spaces. This ease points to their potential for explaining both the rapidity and complexity of human cognitive processing.

Let me now turn to a closer consideration of the CIN illustrated by Figure 1. The dashed arrows linking the generic space to the input spaces and the input spaces to the blended space indicate that structure is projected from the generic space to the input spaces and from the input spaces to the blended space. The arrows are double-headed because, under certain circumstances, structure may also be projected from the blended space back into the input spaces and from the input spaces back into the generic space. (Quite notably, this reverse mapping is not described in other accounts of cross-domain mapping used to explain the cognitive bases of analogy and metaphor.) The Lieberson-as-Dido blend produced in the network may thus inform our conceptions of both the singer and the fictional character, such that we might attribute imperiousness and romantic malaise to Lieberson (the American mezzo-soprano) and hear the

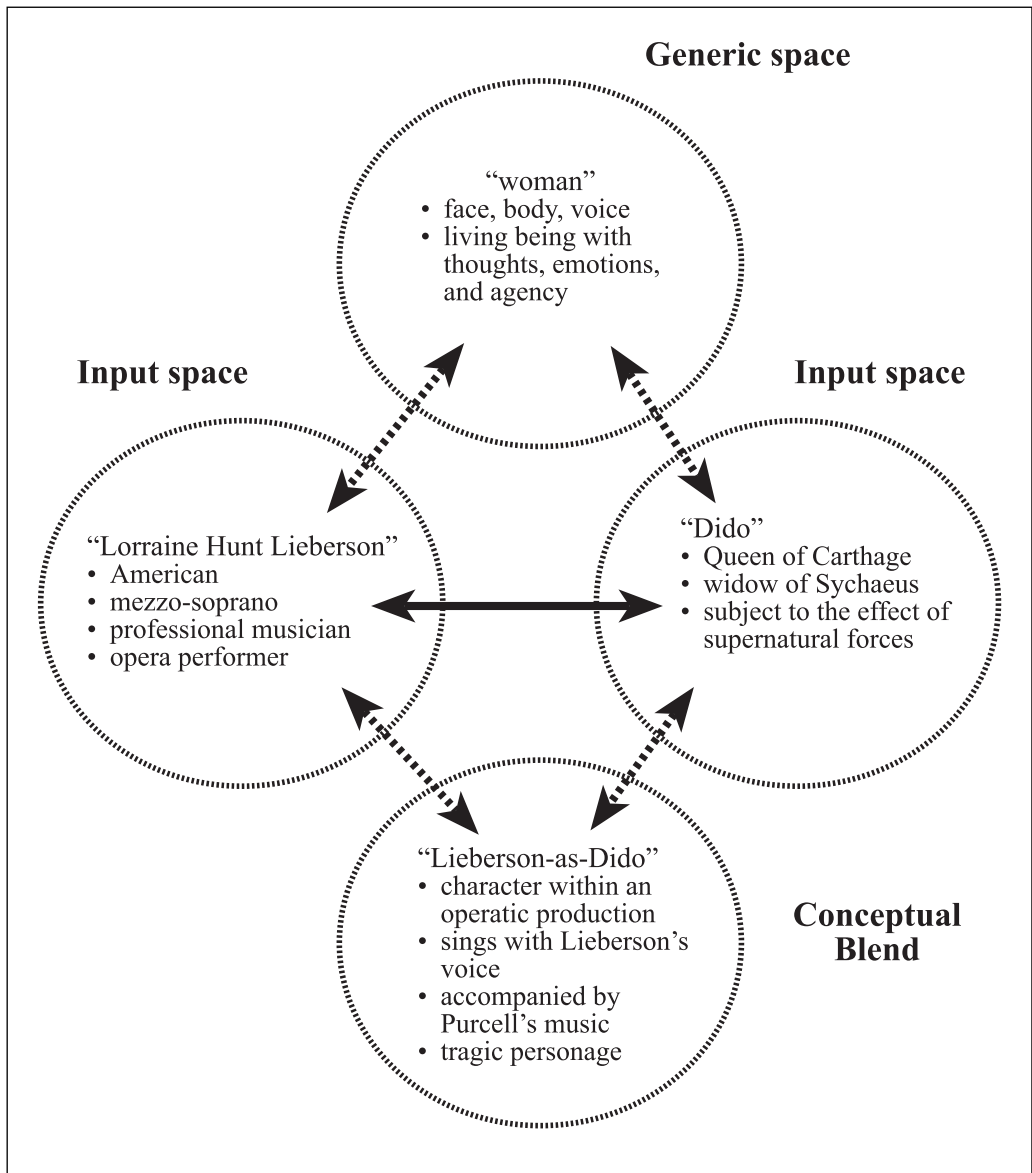


Figure 1. Conceptual Integration Network for Lieberson-as-Dido blend.

classical Dido speaking with Lieberson's voice. Similarly, these conceptions may cause us to reshape our concept of "woman" (if only temporarily), such that the representative of the category wears Lieberson's face or shares Dido's concerns. The double-headed arrows also serve as a reminder of the limitation of diagrams of CINs: mental spaces are dynamic structures, as are the CINs that are built from them. What Figure 1 represents is a sort of snapshot of this particular network, framed with the intent of capturing its essential features but making no claim to exhausting the possibilities for description. Hints about how the CIN and its spaces may develop can be gleaned from the diagram, but a full account would require a series of such snapshots.

In their early work on conceptual blending Fauconnier and Turner identified three operations that produce emergent structure unique to the blend: *composition*, *completion*, and *elaboration*. Composition puts together elements from the input spaces to create new entities in the blended space, yielding Lieberson-as-Dido, the leading character in a dramatic production, one whose every utterance is accompanied by Purcell's music. Completion extends the image suggested by the initial mapping from the input spaces, drawing on our background knowledge of the basic situation summoned by the CIN. Completing the image of Lieberson on stage, we might imagine how she would move once she had taken on the persona of the tragic Dido and how she would interact with the other characters in the opera. Elaboration is an operation more extensive than completion, one that develops the structure of the blended space by building upon the principles and logic evinced by the blend; in effect, the input spaces decrease in importance and the focus is directed toward the rich imaginary possibilities of the blended space. We might thus imagine how Lieberson would perform the role of Dido in a production staged by Peter Sellars (with whom Lieberson had worked) set in present-day New York City (even knowing that Lieberson passed away in 2006).

I should note that all of the conceptual blends I shall discuss here are examples of what Fauconnier and Turner call *double-scope blends*, in which each input space makes a relatively equal contribution to the blended space. On the one hand, there are a range of possibilities for the ways input spaces can contribute to the blend (including *single-scope blends*, in which one input space dominates the process of projecting knowledge into the blend, and CINs with more than two input spaces); on the other hand, Fauconnier and Turner believe that double-scope blends demonstrate most clearly the sort of creativity that distinguish our species (Fauconnier & Turner, 2002, Chap. 7). Of course, a full consideration of the theory of conceptual blending and creativity would require a more extensive exploration of the process than what I can offer here, but this preliminary introduction should suffice to demonstrate the potential of the approach.

As should be evident, conceptual blending is an intensely creative process. That said, the systematic relationships basic to the CIN (and summarized in the generic space) will constrain how concepts are developed. These constraints become evident when we consider a situation such as that raised by initial productions of Mark Morris's danced version of the opera, in which Morris himself danced the role of Dido (Jordan, 2011). Because of the role of gender in the CIN of Figure 1, taking Lieberson out of the network and putting Morris in (or, more properly, the mental space summoned by "the American dancer Mark Morris") has some interesting entailments. The first and most obvious one is that the generic features of a woman are projected onto Morris (a projection he encouraged in these early productions by his movement and his flowing, shoulder-length locks). Within the blend, Morris-as-Dido has Morris's physical features and style of movement but not Morris's voice (since the vocal parts in Morris's production were always taken by trained singers who were offstage). And, keeping in mind the projection back and forth between the different spaces in the blend, the concept "woman" would, to a certain extent, be informed by Morris's portrayal of Dido. Another important constraint concerns what is *not* specified in the topography of the CIN. For instance, since this blend is focused on the attributes of individual personages (including those of "woman" as a generic category, Lieberson, Dido, and Lieberson-as-Dido) the temporal framework for each personage is not part of the topography of the CIN. While such a temporal framework can surely be imagined – Dido, for instance, might be situated in a classical context (along with other heroes and heroines of the ancient world) or she might be the Dido of Purcell's original production – from the perspective of the CIN shown in Figure 1 it will not be part of the knowledge projected into the blend. This is not to say that temporal frameworks are irrelevant – they are indeed crucial to one of the

classic examples of conceptual blending, the “ghost ship” blend analyzed by Fauconnier and Turner (1998, pp. 154–156) – only that they are not part of the topography of the CIN relevant to the Lieberson-as-Dido blend and thus not among the concepts projected within the network that is associated with our imaginary production of Purcell’s opera.

Again, there is quite a bit more to the theory of conceptual blending than what I have presented in this brief outline, focused as it is on the most prominent aspects of the theory. Nonetheless, the account of the basic elements I offer here provides a framework for considering two aspects of the theory that pose challenges for the study of creativity. The first of these concerns the way knowledge is projected across the integrated mental spaces of a CIN; the second concerns the kind of knowledge that is conveyed by musical utterances.²

Conceptual blending and creativity

Before turning to the two aspects of the theory of conceptual blending that might inform how we study creativity it will be helpful to have working definitions of two key terms: “creativity,” and “concept.”

Following Margaret Boden, we can understand creativity as involving the ability to generate novel and valuable ideas (Boden, 2009, p. 24).³ With respect to the Lieberson-as-Dido blend, the novelty of thinking of Lieberson in the role of Dido is not, on the whole, remarkable: we are used to singers taking on different roles. However, we may never have thought of Lorraine Hunt Lieberson (or, for that matter, Mark Morris) as Dido, and if this is the case the idea would have to be considered a novel one. With regard to the value of this idea, much depends on our purposes, but were we considering who to cast in one of the lead roles in Purcell’s opera the idea of Lieberson-as-Dido could be very useful, if only as a standard against which to compare other singers. Of course, “novelty” and “value” are not unencumbered terms: what is novel is always understood in terms of what has come before, and what is valuable clearly depends on context. That said, a definition of creativity that would not include novelty and value would seem to be a very strange definition indeed.

It is rather more challenging to define “concept,” about which volumes have been written. In my own work I have adopted a broadly pragmatic approach that takes as its point of departure research on processes of categorization.⁴ The basic idea is that the process of conceptualization begins with cognitive categories, a strategy that makes it possible to think of concepts as cognitive constructs that can be independent of language. Accordingly, pre-linguistic children can have concepts (Mandler, 2004), as can members of other species (Griffin, 1992). On the view I have developed, then, concepts have three defining characteristics. First, concepts are cognitive constructs that result from processes of categorization and stable enough to be stored in memory. Second, concepts offer a resource that organisms can use for present and future actions. And third, concepts of one sort (say, those associated with visual or linguistic domains) can be related to concepts of another sort (say, those associated with sequences of musical events, or related to physical movements).⁵ Accordingly, the mental spaces involved in a CIN are furnished primarily with cognitive categories and relations between them. These categories could, in rare cases, have only one member (such as the category “Lorraine Hunt Lieberson”), or they may have many (as is the case with the category “Dido,” who exists in many guises). The knowledge basic to the category could also be of a sort that is largely independent from language, as is the case with the category “movements Mark Morris makes in the role of Dido.”

Broadly speaking, then, a successful conceptual blend will give rise to a new category that combines elements of established categories (and relations between these categories), and will

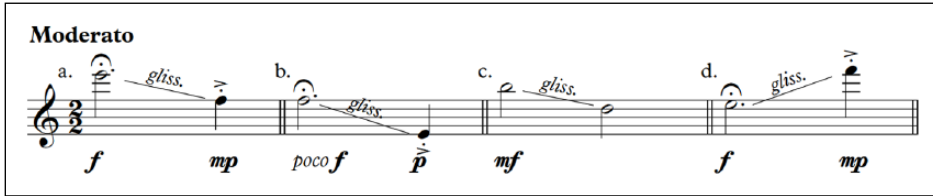


Figure 2. Four simple figures for the violin.

do so in a way that has value for the task at hand. With this perspective in place, let me now turn to two aspects of the theory of conceptual blending that pose interesting challenges for how we think about creativity, both within and without music.

The first aspect concerns the projection of knowledge across the constituent mental spaces of a CIN. Knowledge is projected from the input spaces into the blend, but it is also projected from the blended space back to the input spaces. This then suggests a new perspective on creativity: to be creative is not only to come up with new and valuable ideas, but to redefine the ideas basic to a particular area of inquiry. The potential of this new perspective – as well as the complications it entails – is perhaps clearest in the challenges it presents to computational models of conceptual blending. Most of these models are based on the quite reasonable assumption that information (however it is formalized within the computational framework) is selectively projected from discrete domains into the new domain specific to the conceptual blend (Pereira, 2007). The notion that the blended concepts would re-shape concepts from the input spaces suggests that computational models that model neural networks would have to implement some form of recurrence, such that new information generated within the network could then be used to modify information in the input nodes. A computational realization of this process – which would entail not only recurrence but, more importantly, decisions about what information from the blend would be brought back to the input spaces – is hardly trivial, and yet it would point toward a highly dynamic model of creativity that would seem to come somewhat closer to what is achieved within human intelligence.

The second aspect of conceptual blending theory that poses a challenge to how we think about creativity concerns the nature of musical utterances and in particular how these utterances differ from linguistic utterances. Allow me to exemplify this difference with a practical exercise: to the extent you are able, try to summon in your aural imagination the musical events depicted in Figure 2a, as played by your favorite violinist (or, if you are a violinist, were you to imagine yourself playing them). The musical events specified by the notation, when performed, would produce a distinctive gesture with a certain amount of intensity (the sustained *forte* E6 falling to a *mezzopiano* F5), drama (the glissando leading to an abrupt staccato), and suspense (the dissonance between E and F suggesting the need for some sort of riposte). Language, of course, can capture aspects of this sequence of musical events – this was, after all, the means by which I just directed your attention to aspects of Figure 2a – and we could also replace the music notation with written instructions for the violinist: “In a moderate tempo, play a glissando from a *forte* E6 to a *mezzopiano* F5, with the first note and glissando lasting a bit more than three times the duration of the second, using an accented staccato articulation for the second note.” I would like to propose, however, that neither kind of linguistic account could replace the visceral effect of this simple figure, an effect that is key to its substance as a musical utterance. In my work on how we

conceptualize music I have proposed that a sequence of musical sounds like that of Figure 2a could be thought of as a member of a category of musical events – that is, a musical concept. Other members of this category might include replications of Figure 2a (by different violinists, or the same violinist at different times) but could easily extend to figures like that shown in Figure 2b. If Figure 2a were taken as most typical of the category (typicality effects being one of the marks of cognitive categories; see Zbikowski, 2002, pp. 41–42), Figure 2b could be thought of as somewhat less typical, and the musical events notated in Figure 2c as even less typical. Whether the musical events of Figure 2d would be less typical still would depend in part on the motivations for evaluating different members of this musical category – after all, Figure 2d does preserve the pitch classes, dynamics, and articulations of Figure 2a. Perhaps most important for my purposes, however, is that as you considered these different figures your evaluation of them might well have been guided by using each bit of notation to activate your aural imagination and then comparing these activations with one another. If this occurred – and even simple figures like those shown in Figure 2 can be challenging to simulate aurally – I would propose that you were dealing with musical concepts, concepts that we could certainly describe with language but the cognitive substance of which would extend beyond linguistic description.

One of the distinctive features of musical concepts is their temporal specificity: the performance of Figure 2a (whether actual or simulated in the imagination) entails a temporal span that is co-extensive with the dynamic shape that constitutes this musical utterance. Indeed, in my recent work on the foundations of musical grammar I have proposed that, at the most basic level, musical utterances provide sonic analogs for a range of dynamic processes (Zbikowski, 2015, 2017). Thus the music of Figure 2a could serve as an analog for the process of an object falling off a shelf (a process which itself could be largely soundless, save for the sound of the object striking the floor). Yet it could also serve as an analog for the process of becoming aware of some foreboding event. In either case, however, the meaning of this musical utterance must begin with its actuality – that is, with the effect it makes on us when we attend to the sonic arc it carves through time.⁶

This perspective on musical concepts has two entailments for applications of conceptual blending theory to music. First, given the importance of language to the development and articulation of blending theory, it is quite possible that the concepts involved in a musical analysis will be linguistic, rather than musical, concepts. That is, they will be accounts, rendered through language, of salient features of musical events (and will thus be much like my initial description of Figure 2a). We can, of course, learn much about music through the tools provided by language but it is well to observe that the conception of music developed by this means remains beholden to language. Put another way, one would not want to mistake the kind of communication that is engendered through the linguistic description of sequences of musical events for the kind of communication that is engendered through the performance or mental simulation of sequences of musical events.

The second entailment, related to the first, concerns the introduction of musical concepts into a double-scope network. As I noted, one of the things that makes conceptual blending possible is a uniform topography across the mental spaces in a CIN (a topography that is summarized in the generic space). According to the perspective I have developed here, however, at the most fundamental level the conceptual knowledge associated with language is different from the conceptual knowledge associated with music. Where both of the input spaces are drawn from language (as in the Lieberon-as-Dido blend discussed above) or from music (as in the intra-musical structural blend discussed in Tsougras & Stefanou, 2015, and this

issue), there will be no barriers to establishing a uniform topography across the mental spaces of a CIN. When, however, concepts from language and music combine (as they do in 19th-century Lieder), something has to give: either the organization of the mental space set up by music will need to bend toward the organization of the mental space set up by language, or the organization of the mental space set up by language will need to bend toward the organization of the mental space set up by music.

In what follows I would like to explore in a bit more detail the latter situation – that is, a case where our understanding of language is shaped by music – through applying conceptual blending theory to the lament sung at the conclusion of Purcell’s *Dido and Aeneas*. My aim will be to give a practical demonstration of how blending theory can be applied to music and to flesh out in a bit more detail the notion that music provides resources for the construction of meaning that are distinct from those of language.

Conceptual blending and music

Dido’s lament

The lament sung by Dido at the end of Purcell’s opera became justifiably famous in the 20th century, providing scholars and teachers with a compelling and compact example of the power of operatic music which – at least for Anglophone audiences – had the added benefit of being sung in English. More recently, Janet Schmalfeldt published a thoughtful and wide-ranging analysis of the aria that explores in some detail the harmonic organization of the whole with the aim of understanding the impact the aria has made on listeners (Schmalfeldt, 2001). The account I offer here is rather more narrow in scope, and focused in the main on the different resources that words and music provide for the construction of meaning, both individually and combined.

Nahum Tate’s text for this portion of the opera is spare and to the point (Price, 1986, p. 75). In the recitative, Dido – speaking to Belinda, her lady-in-waiting – accepts death as the price of her infidelity to the memory of her deceased husband Sychaeus:

Recit. Thy hand, Belinda, darkness shades me,
 On thy bosom let me rest,
 More I would, but Death invades me;
 Death is now a welcome guest.

The aria then looks toward the future, a future in which Dido herself is but a memory:

Aria When I am laid in earth,
 May my wrongs create
 No trouble in thy breast;
 Remember me, but ah! forget my fate.

Three main ideas guide the words Tate gives to Dido for this, her final aria. First, the straightforward acceptance of death (“When I am laid in earth”). Second, a hope that Dido’s “wrongs” – which can be broadly understood as the entailments of Fate – may be buried with her, such that they will create “no trouble in thy breast.” And third, a plea to be remembered not for the course her life took but for whom she was as a person.

In setting this text Purcell made recourse to one of his favorite compositional devices, a ground bass over which various melodic lines could be cast. The ground he chose begins with a minor-mode descending tetrachord that, as Ellen Rosand noted in a discussion of similar grounds, formed the basis of ostinato patterns around which many operatic laments were organized during the 17th century (Rosand, 1979). In the case of Purcell's ground, the four notes of the descending tetrachord are G–F–E ♭–D, to which is appended the cadential sequence B ♭–C–D–G. Such patterns were often embellished through chromaticism, as is Purcell's; in consequence, the descending span from G to D becomes G–F ♯–F–E–E ♭–D. An important feature of Purcell's version is the rhythmic design: F ♯ and E ♭ – the non-diatonic embellishments of the original tetrachord – are placed on the beat and given agogic accents, both of which bring them into prominence. Coming after the protracted descent to D that results, the cadential sequence that concludes the ground seems to come almost too quickly, pressing ahead with a return to D followed immediately by the low G that completes the pattern. The result is a sonic analog for a relentless descent, one in which there is a sense of being pulled with an almost palpable effort, moving by uneasy stages toward some terrible goal. It bears mention, however, that Purcell's ground could also serve as a sonic analog for the gradual ebbing of Dido's life force as Death overtakes her, or an encroaching shadow as the light fades. That said, the cyclicity of the ground – repeating this same pattern again and again – suggests that it is the accumulation of sonic images, which I have characterized as “moving forward in uneasy stages,” that is its most telling aspect.⁷ The melody for the aria is then cast over eight repetitions of the ground, which fall into two relatively equal halves.⁸ The words, however, are not distributed equally across the two halves. Instead, Purcell sets the first three lines of Tate's text in the first half (bars 6–25), and the fourth line – with its plea for remembrance – in the second half (bars 26–46).

One of the ways composers can interpret a text is through the repetition of phrases, or individual words, in their settings. In his treatment of the first three lines Purcell avails himself of both strategies. The entire sequence is set over two statements of the ground (in bars 6–15), and then the whole is repeated (in bars 16–25). Purcell also pulls out word pairs for emphasis: from the first line, “am laid” (in bars 7–8 and 17–18) and “no trouble” (in bars 11–13 and 21–23).⁹ The use of these strategies then intensifies in the setting of the last line of text: the line as a whole is repeated four times (twice each in bars 26–36 and in bars 36–46) and in the first and third iterations of the line “remember me” is pulled out for additional emphasis through repetition. These strategies, taken together, have the effect of slowing down the delivery of the text, as does the simple act of putting them in the mouth of a singer (who has to negotiate a world of pitch, rhythm, timbre, and dynamics as she gives voice to the words). As the composer Martin Boykan noted, “a text is sung far more slowly than it is spoken, and even where the musical tempo is fast and we have the impression of speed, the words move at a rate that we would find intolerable in conversation” (Boykan, 2000, p. 133). Indeed, where it would take slightly under 10 seconds to speak the words of Dido's aria, in performance their delivery typically takes around two and a half minutes. This expansion of the time it takes to deliver the words has an important effect on the way they contribute to the construction of meaning, moving them closer toward ritual speech and farther away from everyday discourse. This is, of course, an important consideration in thinking about how words and music combine to create meaning, but for present purposes I shall keep my focus on the contrast between the basic resources offered by each medium of communication for the construction of meaning.

Interactions between music and words in Dido's lament

Again, the most obvious resource exploited by Purcell in his setting of Tate's text is the basic conceit of the ground bass, the regular statements of which guide the overall course of the aria.

The image shows a musical score for Henry Purcell's aria "When I am laid in earth" from *Dido and Aeneas*. The score is arranged in two systems. The first system (bars 6-9) includes staves for Violino I, Violino II, Viols, Dido (with lyrics), and Basso continuo. The second system (bars 10-14) includes staves for Violino I, Violino II, Viols, Dido (with lyrics), and Basso continuo. The key signature is two flats (B-flat and E-flat) and the time signature is 3/2. The lyrics are: "When I am laid, am laid in earth, may my wrongs create no trouble, no trouble in thy breast."

Figure 3. Henry Purcell, *Dido and Aeneas*, Act III, Scene 2 (aria) "When I am laid in earth," bars 6–14.

In the first half of the aria, for instance, Dido's melody conforms, in the main, with the ground. As can be seen in Figure 3, which provides the score for Purcell's setting of the first three lines of text, although her melody spans two statements of the ground it has a comfortable point of articulation at the midpoint: the last syllable of "create" (which concludes one line of text) is set with a B ♭ 4, which sounds against a G2 in the bass and is harmonized with a G minor chord; the setting of the word "no" with E ♭ 5 then changes both the register and the harmony, and initiates the next line of text. Although the melody occasionally asserts its independence from the ground (with the leap up to D5 in bar 9 and the leap to E ♭ 5 in bar 11), in terms of rhythmic figuration, the intervals it makes with the bass, and its overall trajectory, the model for the melody tends to be one of conformance with the overall pattern established by the ground.

In the second half of the aria Purcell changes strategy. As shown in Figure 4, which provides the score for bars 25–39, he sets the first statements of "remember me" with a repeated

25

Re - mem - ber me re - mem - ber me, but

30

ah! _____ for - get my fate, re - mem - ber me, but ah! _____

35

for - get my_ fate. Re - mem - ber me, re - mem - ber me,

Figure 4. Henry Purcell, *Dido and Aeneas*, Act III, Scene 2 (aria) “When I am laid in earth,” bars 25–39.

D5 which resists the downward trajectory of the bass and which clashes, in bar 28, with the E ♯ 3 and E ♭ 3 of the ground. The voice's independence from the bass continues across the repetition of the ground, the completion of the line of text – “but ah! forget my fate” – stretching into bar 32. The setting of the last word of the line, “fate,” returns to the same D5 that earlier resisted the pull of the bass and then springs up to a climactic G5 in bar 33 as the entire line is reprised; quite notably, this reprise is set to a different melody that finally comes into alignment with the ground. This alignment also occasions a redrafting of the second pass through the melody and the text, which now starts a bar later. As a result of this displacement the clash between D5 and the ground bass is largely eliminated, and while the melody still stretches across the repetition of the ground the effect is somewhat more muted: the listener now knows that the climactic G5 will only momentarily forestall the melody's acquiescence to the ground.

The relationship between the melody sung by Dido and the lamento ground point to a further way that musical utterances can differ from those of language. Purcell clearly means the ground to be heard as a distinct element within the aria: a statement of the ground precedes the entrance of the voice, and the pattern is never varied across its 11 statements (if we include the introduction and postlude). The melody, however, also proceeds as a distinct element, one that can embellish and conform to the basic pattern of the ground (as it does in the first half of the aria) or be placed in opposition to it (as it is in the second half of the aria). The aria thus comprises two distinct but related syntactic streams, the interaction of which shape the structure of the musical utterance. Perhaps most important for our consideration of conceptual blends that involve music, this structure emerges gradually over time: the interactions between the melody and the ground in the first half of the aria are manifestly not the same as in the second half of the aria, and this difference is key to the meaning of the musical utterance as a whole. Although the nature of this meaning is not something captured easily by words, it becomes a bit clearer when we consider how concepts prompted by Purcell's music blend together with those prompted by Tate's words.

In the CIN associated with this blend, which is shown in Figure 5, one of the input spaces is set up by Tate's text. This space includes concepts associated with the three main ideas that guide the words Dido sings: acceptance of death, a hope that her unhappy fate will be forgotten, and a plea for remembrance. A second input space is set up by Purcell's music, and includes concepts associated with the relentless lamento ground and the different ways Dido's melody interacts with the ground. I have proposed that the combination of concepts from these two spaces is guided by the very general notion of an ultimately futile resistance to fate. While such a notion is certainly associated with any number of mythic tales, in more mundane terms it might also be a way to think about the emotions and thoughts of a young child being pulled by a parent toward some necessary but almost assuredly unpleasant experience (such as routine immunizations). While the notion of a futile resistance to fate glimmers only vaguely in Tate's text (with its plea for remembrance set against the certainty of death), it emerges with force in Purcell's music through the change in Dido's melody from the first half of the aria to the second. The concepts from the input spaces then come together in the blend to produce an enactment of a struggle – again, ultimately futile – against oblivion.

The features of this conceptual blend can be fleshed out by considering the three basic processes that produce emergent structure unique to the blend: composition, completion, and elaboration. With respect to the first of these, the combination of Tate's “laid in earth” with Purcell's ground is natural enough, the lamento bass being strongly correlated with physical descent (which here is further associated with death); this is, of course, a combination borne out by the music for the first half of the aria. The combination of “remember me” with the more

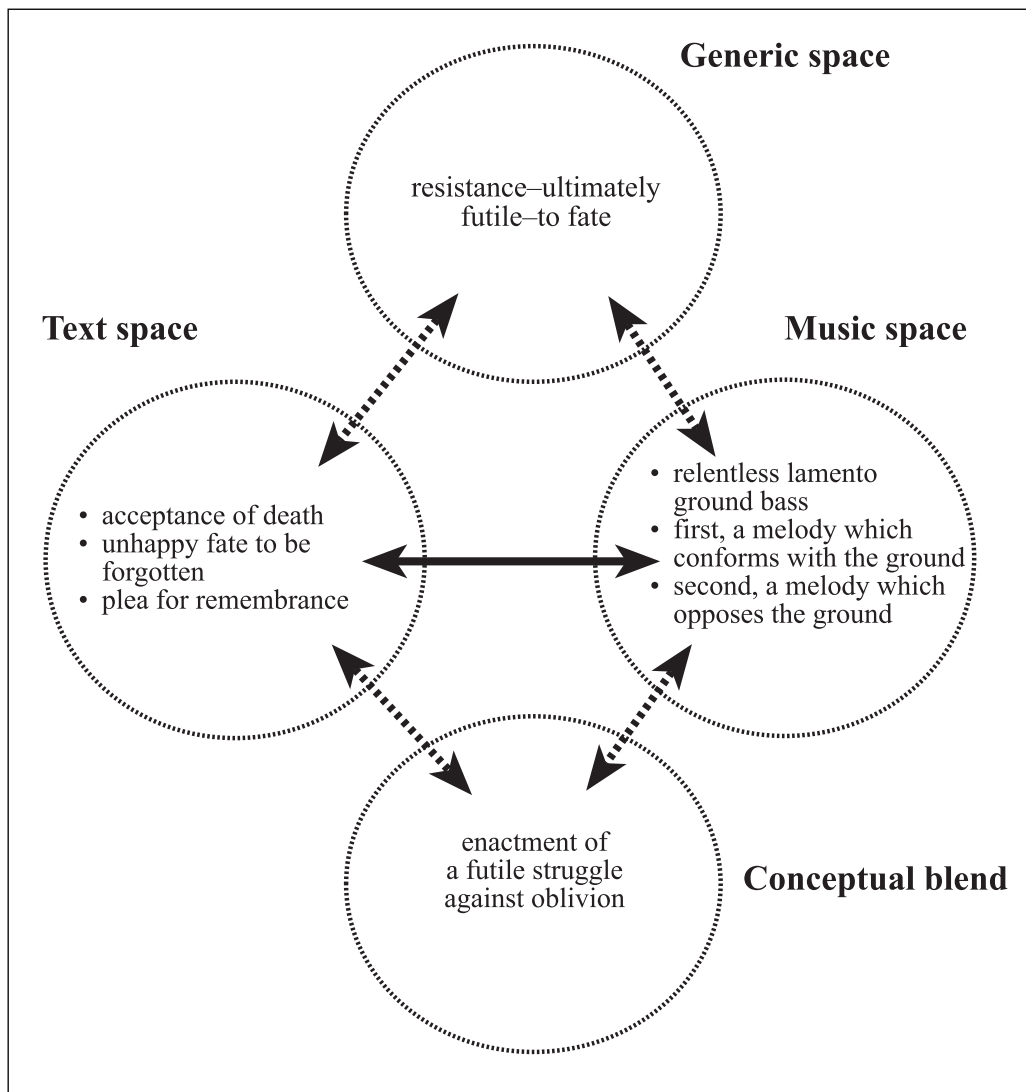


Figure 5. Conceptual Integration Network for Purcell, *Dido and Aeneas*, Act III, Scene 2 (aria) “When I am laid in earth”.

resistant second half of the aria is, however, rather more involved, and points toward the reason for making such a plea – anxiety in the face of oblivion – that finds an analog in the resistance Dido’s melody offers against the inexorable repetitions and descent of the bass. Completing the blend, we might imagine the circumstances and behavior of a singer caught up in this struggle: her overall posture, the way she might move, and her interactions with the singer taking the role of Belinda. An elaboration of the blend might extend to what we imagine happens subsequent to the conclusion of the aria – how Dido’s death is portrayed, and how the rest of the cast react to this conclusion to the opera. What I should like to emphasize – and what I hope a consideration of Figure 5 makes clear – is that given only Tate’s text or only Purcell’s music

there would be no reason why we might be led to imagine the enactment of a futile struggle against oblivion. Tate's text – and only that – could invite us to imagine a rather humdrum scene: Dido, leaning against Belinda, making a simple request that her lady-in-waiting remember her queen after she has died. Purcell's music – and only that – would certainly fit with a melancholy scene, but it might be one very different from that occupied by Dido and Belinda: for instance, the melody could be sung by Aeneas (assuming the role was taken by a counter-tenor), his words describing his reaction to the loss of a fallen comrade and recollecting his bravery. It is only when the two combine, as they do in Purcell's masterful aria – the concrete anchors for thought provided by Tate's text brought together with the highly dynamic structures activated by Purcell's music – that Dido's agonized emotions come to life.

Summary

As made evident by thorough analyses like that offered by Schmalfeldt, the success of Dido's lament is not an accident but is instead a testament to Purcell's musical artistry. It also seems apparent, however, that a detailed understanding of all of the niceties of Purcell's compositional design is not required to gather meaning from the aria. Some of this meaning is, of course, a consequence of the dramatic situation, a tragedy which comes to its culmination with Dido's death. I should like to argue, however, that the bulk of the meaning comes from the way Purcell shapes the listener's experience through sonic analogs that model first Dido's acceptance of her sad fate, and then the flash of resistance through which she would claim a species of immortality. The account I have offered here, drawing on the analytical framework provided by conceptual blending theory, is at best an introduction to the means through which Purcell achieves these extraordinary ends. I believe it nonetheless points to the different resources for the construction of meaning offered by music and by words. I believe it also provides a way to study the relationship between these two communicative media through exploring how concepts specific to each can be combined to create a rich world for the imagination.

Conceptual blending, creativity, and music

As I noted in my opening comments, creativity is an elusive subject. Indeed, part of our fascination with the notion may be the mystery with which it is surrounded: creativity can seem like an alchemical process through which the dross of commonplace thought is transformed into the scintillating gold of exceptional ideas. Nonetheless, it now seems apparent that creativity is a capacity demonstrated not only by the fearless innovator and the revolutionary artist but also by anyone who has ever uttered an expression like "If I were you, I wouldn't do it that way." An utterance like this produces a blend of concepts (the speaker combining his wisdom with the actions of the person to whom he is speaking) that opens up a highly productive realm of the imagination. As shown by the work of Fauconnier and Turner, as well as others, such blends can be studied through conceptual integration networks, which provide a means to specify how concepts from two demonstrably different domains can be combined to create a novel and useful domain for the imagination.

One of the remarkable things about the creative process of blending concepts is the potential for the new ideas that are produced through the blend to inform older ideas that anchor the process. When I say, "If I were you, I wouldn't do it that way" I will not, of course, actually engender a process through which I become you. That said, having put myself in your shoes I will have subtly altered my conception of myself. Similarly, to imagine Lorraine Hunt Lieberson in the role of Dido is to change the way we think about Lieberson, about Dido, and possibly even

about the basic-level category “woman.” And to hear Dido’s struggle against fate, as Purcell’s setting of Tate’s words invites us to do, is to think in new ways about a sequence of musical sounds that could have been used to somewhat different ends, and to hear resonances in words (“remember me”) that might have at first eluded us.

It bears emphasis that conceptual blending is conceived of as a cognitive process related to processes of cross-domain mapping that yield analogy and metaphor (Fauconnier, 2001). To be sure, we still have much to learn about such processes but two things seem certain. First, that processes of cross-domain mapping contribute much to the distinctive character of human cognition; and second, inasmuch as music is a product of human cognitive processes, cross-domain mapping – manifested through analogies, and metaphors, and conceptual blends – will inform our understanding of music.

As I have noted, the application of conceptual blending theory to music presents a number of challenges. Some of these – for instance, studying the process of blending through computational models – are of general import, concerned as they are with the highly dynamic nature of human thought. Others – for instance, the status of conceptual knowledge – have a more direct bearing on musical understanding. Indeed, if it is the case, as I have proposed, that the knowledge fundamental to the production and reception of musical utterances is of a different sort than that which is associated with linguistic utterances, the analysis of blends that draw on concepts from both music and language could lead to a thorough reconsideration of the assumptions basic to conceptual blending theory. Such a reconsideration could contribute much to our understanding of conceptual blending and may also help us better understand the unique resources musical utterances offer for human cultural interactions.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Notes

1. Indeed, recent discussions and debates about gender point out the rather interesting complexities a basic-level category like “woman” may conceal and suggest ways that category may be modified as additional knowledge is acquired.
2. I should note that I use “musical utterance” as a covering term for “a sequence of musical sounds produced in the service of musical communication.” I leave open the modality through which a musical utterance is produced – for instance, it could be produced with the voice, an instrument, or by means of a computer program – as well as the number of performers or sound sources involved in the production of the utterance. Further, while I adopt the basic model assumed by interpersonal communication – that is, that there is someone producing an utterance for someone else to apprehend – I also accept that in some cases both the individual producing and the individual apprehending an utterance may be virtual rather than actual.
3. An alternative definition is offered by James Kaufman and Robert Sternberg: “Most definitions of *creative ideas* comprise three components. First, those ideas must represent something different, new, or innovative. Second, they need to be of high quality. Third, creative ideas must also be appropriate to the task at hand” (Kaufman & Sternberg, 2007, p. 55). To my mind, Boden’s notion of “value” embraces both quality and appropriateness, and so I prefer her more compact definition.
4. As I noted in previous work (Zbikowski, 2002, pp. 59–61), I am not the first to make a strong connection between categories and concepts, or to assert their equivalence. See, for instance, Hampton and Dubois (1993), Barsalou (1993), Barsalou et al. (1993), Smith and Medin (1981), and Murphy and Medin (1985).

5. In previous work I proposed that cognitive categories are based on knowledge structures akin to frames (Minsky, 1975; Barsalou, 1992) which I called conceptual models, and which stabilize the information basic to the category but also allow it to be modified over time. See Zbikowski (2002, pp. 41–48 and Chapter 3).
6. It bears mention that the experience of a performer actually producing sounds such as those illustrated by Figure 2 may be of a sort substantively different from that of a more or less passive listener, not least because she will be concerned in the first instance with the motor movements necessary to produce those sounds. To simplify matters, however, I would like to keep a focus on the active audition of musical sounds – whether by a performer, a listener, or by a composer imagining these sounds (which I take to be included in the notion of “active audition”) – as distinct from embodied processes that might be the source of, or correlated with, such audition. Although composers or performers may be the “first listeners” to a sequence of musical sounds, I assume that the functional bases of their audition are not dissimilar from those of listeners not involved with the active production of musical sounds.
7. I should emphasize that the notion of “sonic images” I employ here, along with ideas about musical imagination in general, are in no way wedded to a visual modality. Put another way, “image” does broad service here as a kind of cognitive construct and “imagination” as the activation of such cognitive constructs.
8. The aria is introduced by one statement of the ground and – after Dido’s final words – concluded with two further statements of the ground. In the last two statements the choir of viols that has accompanied Dido offers its own web of melodic strands which reflect upon, and consummate, Dido’s own melodies.
9. It is worth noting that these word pairs index two of the themes of the aria: acceptance of death, and the hope that Dido’s collision with Fate will be buried with her.

References

- Barsalou, L. W. (1992). Frames, concepts, and conceptual fields. In A. Lehrer & E. F. Kittay (Eds.), *Frames, fields, and contrasts: New essays in semantic and lexical organization* (pp. 21–74). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Barsalou, L. W. (1993). Flexibility, structure, and linguistic vagary in concepts: Manifestations of a compositional system of perceptual symbols. In A. F. Collins, S. E. Gathercole, M. A. Conway, & P. E. Morris (Eds.), *Theories of memory* (pp. 29–101). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Barsalou, L. W., Yeh, W., Luka, B. J., Olseth, K. L., Mix, K. S., & Wu, L.-L. (1993). Concepts and meaning. In K. Beals, G. Cooke, D. Kathman, S. Kita, K.-E. McCullough, & D. Testen (Eds.), *Chicago Linguistics Society 29: Papers from the parasession on the correspondence of conceptual, semantic and grammatical representations* (pp. 23–61). Chicago: University of Chicago & Chicago Linguistics Society.
- Boden, M. A. (2009). Computer models of creativity. *AI Magazine*, 30(3), 23–34.
- Boykan, M. (2000). Reflections on words and music. *Musical Quarterly*, 84(1), 123–136.
- Cambouropoulos, E., Kaliakatsos-Papakostas, M., & Tsougras, C. (2015, August). Structural blending of harmonic spaces: A computational approach. In J. Ginsborg, A. Lamont, M. Phillips, & S. Bramley (Eds.), *Proceedings of the Ninth Triennial Conference of the European Society for the Cognitive Sciences of Music (ESCOM)*. Manchester, UK: Royal Northern College of Music.
- Coessens, K. (2013). The agile musical mind: Mapping the musician’s act of creation. In T. Veale, K. Feyaerts, & C. J. Forceville (Eds.), *Creativity and the agile mind: A multi-disciplinary study of a multi-faceted phenomenon* (pp. 335–353). Berlin, Germany: De Gruyter Mouton.
- Fauconnier, G. (1994). *Mental spaces: Aspects of meaning construction in natural language* (2nd ed.). Cambridge, UK: Cambridge University Press.
- Fauconnier, G. (1997). *Mappings in thought and language*. Cambridge, UK: Cambridge University Press.
- Fauconnier, G. (2001). Conceptual blending and analogy. In D. Gentner, K. J. Holyoak, & B. N. Kokinov (Eds.), *The analogical mind: Perspectives from cognitive science* (pp. 255–285). Cambridge, MA: MIT Press.

- Fauconnier, G., & Turner, M. (1998). Conceptual integration networks. *Cognitive Science*, 22(2), 133–187.
- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. New York: Basic Books.
- Gick, M. L., & Holyoak, K. J. (1983). Schema induction and analogical transfer. *Cognitive Science*, 15(1), 1–38.
- Griffin, D. R. (1992). *Animal minds*. Chicago: University of Chicago Press.
- Hampton, J., & Dubois, D. (1993). Psychological models of concepts. In I. V. Mechelen, J. Hampton, R. S. Michalski, & P. Theuns (Eds.), *Categories and concepts: Theoretical views and inductive analysis* (pp. 11–33). London, UK: Academic Press.
- Jordan, S. (2011). Mark Morris marks Purcell: *Dido and Aeneas* as danced opera. *Dance Research*, 29(2), 167–213.
- Kaufman, J. C., & Sternberg, R. J. (2007). Resource review: Creativity. *Change*, 39(4), 55–58.
- Mandler, J. M. (2004). *The foundations of mind: Origins of conceptual thought*. Oxford, UK: Oxford University Press.
- Minsky, M. (1975). A framework for representing knowledge. In P. H. Winston (Ed.), *The psychology of computer vision* (pp. 211–277). New York: McGraw-Hill.
- Murphy, G. L., & Medin, D. L. (1985). The role of theories in conceptual coherence. *Psychological Review*, 92(3), 289–316.
- Pereira, F. C. (2007). *Creativity and artificial intelligence: A conceptual blending approach*. Berlin, Germany: Mouton de Gruyter.
- Price, C. (Ed.) (1986). *Dido and Aeneas, an opera*. New York: W. W. Norton.
- Rosand, E. (1979). The descending tetrachord: An emblem of lament. *The Musical Quarterly*, 65(3), 346–359.
- Rosch, E. (1999). Principles of categorization. In E. Margolis & S. Laurence (Eds.), *Concepts: Core readings* (pp. 189–206). Cambridge, MA: MIT Press.
- Sambre, P. (2013). Multimodal blending and musical creativity: Dualities in the quixotry of Richard Strauss, Jan Sandström and Christian Lindberg. In T. Veale, K. Feyaerts, & C. J. Forceville (Eds.), *Creativity and the agile mind: A multi-disciplinary study of a multi-faceted phenomenon* (pp. 315–333). Berlin, Germany: De Gruyter Mouton.
- Schmalfeldt, J. (2001). In search of Dido. *The Journal of Musicology*, 18(4), 584–615.
- Schorlemmer, M., Smaill, A., Kühnberger, K.-U., Kutz, O., Colton, S., Cambouropoulos, E., & Pease, A. (2014, June). *COINVENT: Towards a computational concept invention theory*. Paper presented at the 5th International Conference on Computational Creativity (ICCC), Ljubljana, Slovenia. Retrieved from http://www.coinvent-project.eu/fileadmin/publications/iccc_2014.pdf
- Smith, E. E., & Medin, D. L. (1981). *Categories and concepts*. Cambridge, MA: Harvard University Press.
- Tsougras, C., & Stefanou, D. (2015, August). Conceptual blending and meaning construction: A structural/hermeneutical analysis of the “Old Castle” from Mussorgsky’s “Pictures at an Exhibition”. In J. Ginsborg, A. Lamont, M. Phillips, & S. Bramley (Eds.), *Proceedings of the Ninth Triennial Conference of the European Society for the Cognitive Sciences of Music (ESCOM)*. Manchester, UK: Royal Northern College of Music.
- Turner, M. (2014). *The origin of ideas: Blending, creativity, and the human spark*. Oxford, UK: Oxford University Press.
- Turner, M., & Fauconnier, G. (1995). Conceptual integration and formal expression. *Metaphor and Symbolic Activity*, 10(3), 183–204.
- Zbikowski, L. M. (1999). The blossoms of “Trockne Blumen”: Music and text in the early nineteenth century. *Music Analysis*, 18(3), 307–345.
- Zbikowski, L. M. (2002). *Conceptualizing music: Cognitive structure, theory, and analysis*. New York: Oxford University Press.
- Zbikowski, L. M. (2015). Words, music, and meaning. In P. A. Brandt & J. R. d. Carmo, Jr. (Eds.), *Sémiotique de la musique [Music and Meaning]* (pp. 143–164). Liège, Belgium: Presses Universitaires de Liège.
- Zbikowski, L. M. (2017). *Foundations of musical grammar*. New York: Oxford University Press.