

# A dream-evocative feature in music can be accounted for by the pitch-height auditory effect and a basic dreaming archetype

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*Summary.* In several famous musical compositions a maintained melodic shift to higher pitches has been overtly exploited to represent the dreaming experience. This kind of shift also plays the artistic role of dream evocation in musical compositions that, although not overtly, are however implicitly related to dreaming. This psychoesthetic effect can be accounted for by two psychological phenomena that at first sight do not seem to be related to each other: the perception of higher pitches as being located in higher space, and the archetypal idea, amply highlighted by anthropological research, of dreaming as the wandering of the soul over celestial territories. This paper describes the rationale underlying the connection between these phenomena. The implications are then discussed in terms of the general relationship between music and dreaming, the connection between the dreaming experience and the artistic experience, the continuity theory between dreaming and waking life, and the role of dreaming in the cognitive science of religion.

*Keywords:* Music and dreaming, Dreaming and esthetics, Music and continuity between waking and dreaming, Dreaming and the cognitive science of religion

## 1. Introduction

Among the most interesting aspects of the possible creative effects of dreaming is the striking amount of music inspired by dreams over the centuries (Barrett, 2001; Grace, 2001; Massey, 2006; Webb, 2017). In a recent review (Olbrich and Schredl, 2019), which focuses on various aspects of the relationship between music and dreaming, the authors underline that the research on this issue is just beginning. The authors also note that how dreams can affect music in waking life by providing musical inspiration is an interesting area of study. This kind of research can be carried out from a psychoesthetic perspective, in order to see whether significant dream-like features are present in musical compositions. In fact, the evocation of the common, universal, experience of dreaming can offer a basic, generally unconscious, tool for emotional communication between those who create music and those who have the esthetic experience of listening to music. Indeed, the observation of possibly unconscious dream-like features in music can provide further and deeper evidence of the fact that music has very often been inspired by dreams.

The aim of this paper is to describe a possible dream-related psychoesthetic effect in musical compositions and to account for this effect considering two other psychological phenomena that at first sight may not seem to be

connected. The dream-related effect consists in the dream-evocative role that can be achieved in musical compositions by a maintained shift to higher pitches. This effect directly connects dreaming with a basic aspect of music, i.e. the occurrence of melodic intervals (Stefani et al., 1990). The two psychological phenomena that can explain this effect are: a) the acoustic illusory perception of higher-pitch sources as being located in higher space (described by Pratt, 1930); b) the archetypal idea of dreaming as the wandering of the soul in celestial territories (see, e.g., Tedlock, 1987).

The paper is organized as follows. After the Introduction, Section 2 provides examples of the conscious exploitation of the shift to higher pitches for the artistic evocation of dreaming in some famous musical pieces. In Section 3, examples are given of this psychoesthetic effect in other musical compositions. The two psychological phenomena are then described (in Sections 4 and 5, respectively) and the rationale for how they relate to the psychoesthetic effect is outlined in Section 6. Finally, the results are discussed with regard to the cultural and scientific study of dreaming.

## 2. Examples of the evocation of dream effects using a shift to high pitches in musical compositions

In the song “Over the Rainbow”, a famous initial ascending octave jump evokes the idea of dreaming in a way that is direct, explicit, and very effective (see, e.g., Citron, 2008, p. 157). This song, composed by Harold Arlen from a text by E.Y. Harburg in 1939, sung by Judy Garland in the movie “The Wizard of Oz”, is still one of the world’s most popular musical pieces. The melody is accompanied by repeated overt references to dreams in the lyrics, and the movie is extremely rich in references to dreaming (Bulkeley, 1999). In this song, the initial jump to a higher pitch range is followed by a melodic stepwise motion, a kind of happy wandering in the new land of dreams. After this higher-pitch wandering,

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the melody develops around the lower initial note, emotionally representing a return to ordinary life after the enriching dreaming experience.

Stefani et al. (1990) considered “Over the Rainbow”, together with some other well-known musical pieces, as supporting the idea that the ascending octave interval (i.e., the interval between a note and exactly the same note in the higher octave) can evoke the idea of dreaming. The other examples were: “Liebestraum” (Love Dream) No. 3, a solo-piano work composed by Franz Liszt in 1850; “A dream is a wish your heart makes”, composed by Mack David, Al Hoffmann, and Jerry Livingston, sung in the movie “Cinderella”, released in 1950; “Aurato Sogno” (Golden Dream), which introduces the aria “Tacea la notte placida” (The Peaceful Night Lay Silent) in the opera “Il Trovatore” (The Troubadour), by Giuseppe Verdi, premiered in 1853; “Frühlingstraum” (Spring Dream), by Franz Schubert, the 11th “Lied” of a cycle (“Winterreise”, Winter Journey) of 24 “Lieder” for voice and piano, composed in 1827 on texts by Wilhelm Müller. All of these pieces are explicitly and intensely centered on the idea of dreaming. In all of them, a jump to higher pitches introduces a melodic wandering over a higher pitch range. For example, in “Frühlingstraum” a simple melodic pattern in an antecedent musical phrase is repeated exactly one-octave higher in the consequent phase, thus expressing a kind of wandering around the one-octave higher note with respect to the initial note. The upper part of Figure 1 shows how the melody in the antecedent phrase (“Ich träumte von bunten Blumen”, I dreamed of many-colored flowers) is resumed, one octave higher, in the consequent phrase (the digits after the notes indicate the octave). In the lower part of Figure 1, the initial octave jump in “Over the rainbow” is clearly shown in the first bar.

From the point of view of music psychology, the hypothesis advanced by Stefani et al. is interesting because, in the century-long history of the attribution of psychological effects to musical intervals (for a concise review, see Table 1

and Table 2 in Costa et al., 2000), it proposed a direct connection between a definite music element and dreaming.

However, in our opinion, a dream-like effect should be attributed to the maintained melodic shift more than to the instantaneous jump. In addition, a melodic shift to higher frequencies is far from being either a sufficient or a necessary way of evoking the dreaming experience. The important point is that in a number of compositions that are significant in the history of music, including the examples extensively analyzed by Stefani et al., the maintained melodic shift overtly fulfills this role in an artistically effective way.

### 3. Melodic shifts to higher pitches in musical compositions that are implicitly related to dreaming

The hypothesis of the dream-evocative value of a maintained shift to higher frequencies is supported by compositions that, although not overtly, are however implicitly connected to dreaming. We will now consider three examples.

The lyrics of “Annie Laurie”, an old Scottish song that Alicia Scott published in 1834, which are said to have been written by the poet William Douglas in the 17th century, poetically recall the happy moments of the author’s romance with Annie Laurie. The idea of losing awareness of reality, as happens in dreams, is hyperbolically expressed as a sweet wish for death: “I would lay me down an’ dee [die]”. The music that corresponds to the sung pronunciation of Annie’s name presents a powerfully evocative octave jump. Then the melody develops over a high-pitch range, thus expressing the dream-like experience of momentarily forgetting the present and living the past again.

In Franz Schubert’s Fantasy op. 15, D760, generally known as “Wanderer Fantasie”, written in 1822, the idea of a wandering soul, like a soul looking for salvation in a dream, is expressed in the initial bars by two phrases that are identical in length and rhythm. Both phrases are char-

The figure displays two musical staves. The upper staff is in 6/8 time and G major, showing a melodic pattern of E4-F#4-E4-C#5 in the first phrase and E5-F#5-E5-C#5 in the second phrase, illustrating an octave jump. The lower staff is in 4/4 time and C major, showing a melodic pattern of C4-C5 in the first phrase and C4-A4-G4-C4 in the second phrase, illustrating a return to the initial note after a high-pitch excursion.

Figure 1. Upper part: In Schubert’s “Frühlingstraum”, the consequent phrase resumes the exact melodic pattern of the antecedent phrase (E-F#-E), exactly one octave higher (the digits after the notes indicate the octave). Lower part: “Over the Rainbow” begins with an octave jump; after wandering in a higher-frequency range, the melody returns, ending with the same initial note. Both lyrics basically refer to the dreaming experience.

(The figure was created in its entirety by the authors. Scores of the two compositions can be found at <https://musescore.com/openscore-lieder-corpus> and <https://musescore.com/user/28693634/scores/5090154> (free sheet music for piano, made by Alien Stuff), respectively.)

acterized by rapid pitch ascents (in the first, by an exactly two-octave interval). This change in pitch range has a strong emotional value, as if the wanderer had actually reached a new land, which had been intensely desired for so long. The author was probably unaware of the dream-evocative value of these ascents; however, a connection with dreaming was consciously and persistently in his mind. In fact, in the same year he wrote a short piece of prose, entitled “Mein Traum” (My dream), centered on an idea of exile and homecoming. Therefore, it is very likely that a parallelism between conscious and unconscious processes connected with dreaming was active in the mind of the author during the process of artistic creation.

“Casta Diva” (Pure Goddess), an aria in Vincenzo Bellini’s “Norma”, composed in 1831, is a prayer that Norma, a priestess in Gaul under the Roman occupation, addresses to the Moon. Norma asks the goddess to grant peace, overtly to her people, and implicitly to her own life. The melody is characterized by a rapid ascending scale and then by a repeated high note that expresses the mystic contact with the goddess’s “bel sembiante” (beautiful face) in the sky. The dream-like aspect of the ascent and of the stabilization on the high note was probably unconscious to the author; however, in the plot of the opera, the description of a dream, dreamed by the Roman proconsul, precedes “Casta Diva”. It seems that a conscious reference to a dream primed the insertion of dream-evocative features into the musical composition.

#### 4. The pitch-height metaphor

The illusory vertical representation of pitch height is a notable psychological phenomenon: “High tones are phenomenologically higher in space than lower ones” (Pratt, 1930). Pratt observed that the succession of the notes of the diatonic scale generally evoked a sensation of upward movement. This phenomenon is plausibly the cause of the linguistic use of the term “high” to metaphorically indicate sharp pitches, which also applies in many languages. This auditory illusion is thus often referred to as “the pitch-height metaphor”. This metaphor can also be recognized in musical notation, because higher notes are represented in higher positions. This effect is closely connected with the general multifaceted association between music and movement. For a recent review and discussion, see Levitin, 2018; for an analysis from the point of view of the role of embodiment, see Leman and Maes, 2014; and for the similarity with the space representation of numbers, see Rusconi et al., 2006. Significantly, this phenomenon is also exhibited by preverbal infants (see, e.g., Walker et al., 2010).

In addition to the pitch-height metaphor, other space representation phenomena of musical features have been observed. For instance, triplet rhythms evoke sensations of rotation. Hansen and Huron (2019) interpreted this effect in the light of the so-called “ecological acoustics”, which connects the properties of sound perception with the physical properties of the environment. Importantly for our study of the psychoesthetic value of pitch ascension, an experimental study of the spatial encoding of pitch revealed a marked asymmetry between the effect of rising frequency sweeps and the effect of falling frequency sweeps (Fernández-Prieto and Navarra, 2017). The pitch-height metaphor is still inspiring a large amount of significant experimental and theoretical research, almost one century after Pratt’s work. The details of this phenomenon have been analyzed and

its implications have been extended by applying a variety of methods. We limit ourselves to referring to a literature review in the Introduction of the aforementioned article by Fernández-Prieto and Navarra and to the bibliographic references contained in this Introduction.

As a result, the space perception of sound pitch appears as a cross-modal phenomenon which, in addition to being significant in its own right, is also connected with a variety of psychophysiological issues concerning and linking perception, movement, cognition, and emotion.

#### 5. The archetypal idea of dreaming as the wandering of the soul over celestial territories

As anthropological research has amply observed, a common belief in numerous cultures is that during a dream the dreamer’s soul leaves the dreamer’s body and reaches other-worldly spiritual lands (see, e.g., Tedlock, 1987). Quoting from Lohmann (2003): “In dreams, part of the self seems to wander off to undertake both mundane tasks and marvelous adventures. Anthropologists have found that many peoples take this experience of dreaming at face value, assuming that their spirits literally leave the body to travel, meet other spirits, and acquire valuable knowledge.” Among the many examples, in Native North American cultures “dreams that begin as personal entities shift during dream telling or performing to provide a cosmic doorway into another dimension of reality.” (Tedlock, 2004). Indeed, this belief appears as a generally conscious or unconscious archetype of the human notion of dreams.

The plausible universality of this archetype closely relates dreams to the idea of overcoming the limits of material life by entering the celestial territories where spiritual entities are thought to reside. This point will be resumed in the Discussion.

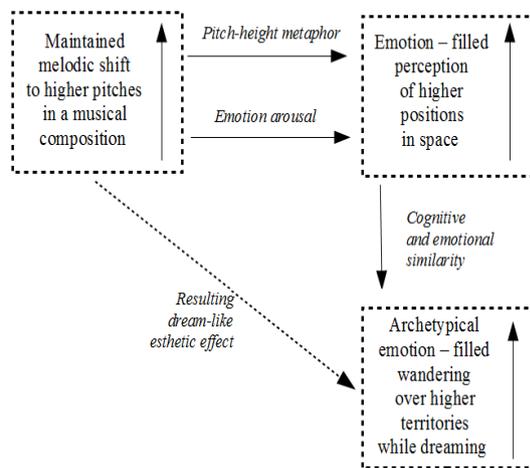
#### 6. The hypothesis of a triple parallelism

We hypothesize that a kind of triple psychological parallelism exists: pitch ascension perceived as vertical ascension, dream experience perceived as ascension to high territories, and pitch ascension in a musical piece unconsciously perceived as a dream-like experience. In other words, three phenomena, in addition to being important in their own right, appear to be interestingly and unexpectedly connected to each other. As Figure 2 shows, the psychoesthetic effect is logically accounted for by two steps: first, the pitch ascension in music determines a feeling of vertical ascension; and second, the vertical ascension evokes an idea of ascension of the soul while dreaming. Basically, both steps are accompanied, and triggered, by emotion. In fact, music arouses emotion, and the archetypal idea of wandering in celestial territories while dreaming is also rich in emotion.

#### 7. Discussion

##### 7.1. Importance of the dreaming experience in psychoesthetics

The relationship between art and dreaming has had various levels of awareness throughout art history. This relationship not only includes the representation of dreams in art, but also concerns forms of “dream-like, but not dreamed structure” (Barrett, 2001; see also Bulkeley, 2003, with regard to motion pictures, and Barcaro and Paoli, 2015, with regard



*Figure 2.* The psychoesthetic effect of maintained shifts to higher pitches can be accounted for by two other psychological effects: the illusory vertical perception of pitch height and the archetypal idea of dreaming as the wandering of the soul over celestial territories. Both phenomena are accompanied, and triggered, by emotional arousal.

to painting). We believe that the recognition of dream-like features in music confirms the close connection between the esthetic experience and the dreaming experience.

### 7.2. Similarities between dreaming and music

Music and dreaming are universal experiences that have a number of interesting similarities, which are worth studying for a better understanding of both music psychology and dream psychology. In 1938, Seeshore attributed a sort of “dream attitude” to composers while creating music (see also Schinco, 2010). A significant presence of tension - resolution patterns (Barcaro, 2018) characterizes the dreaming experience and constitutes a basic aspect of music. Both dreaming and music are characterized by a hierarchy of narrative patterns and by the evocation of memories. From the neurochemical point view, the dopaminergic system, which is associated with appetitive interests, plays a significant role in dreaming (Solms and Turnbull, 2002) as well as in the experience of listening to music (Zatorre and Salimpoor, 2013).

### 7.3. Application of the continuity theory to esthetic experiences

According to the continuity theory, there is a close continuity between dreaming and waking life (Nielsen et al., 2004; Hobson and Schredl, 2011; Domhoff, 2011; Blagrove et al., 2011; Schredl, 2017; see also, specifically with regard to music, Vogelsang et al., 2016). The hypothesis of the insertion of dream-like features in music, extending the continuity theory to psychoesthetics, underlines the basically unconscious aspects of continuity by assuming that a form of dreaming-based communication exists between music composers and listeners to music.

The three examples given in Section II are connected with basic aspects of the continuity between dreaming and

waking life: memory and the reliving of past events (Annie Laurie), overcoming serious concerns (Bellini’s *Costa Diva*), and cognitive and emotional feelings (the idea of exile and homecoming in Schubert’s *Fantasie*).

### 7.4. Dreaming and the cognitive science of religion

The archetypal idea of dreaming as the soul wandering in celestial territories inhabited by spiritual entities closely connects the study of dreaming with the cognitive science of religion.

Quoting McNamara and Bulkeley (2015): celestial entities “can be described in the language of the cognitive science of religion, as supernatural agents (SAs): non-human entities with autonomous powers and intentions. Their bodies may not be clearly seen, but they do have minds and they frequently have unusual powers far beyond the capabilities of ordinary agents”. This is connected with the hypothesis that “dreaming has something to do with the way religious ideas and feelings get started in people’s minds” (Bulkeley, 2016, p. 3). This hypothesis, while being important for the study of dreaming, has far more cultural and scientific implications.

In Jacob’s dream, described in Genesis, the steps of the ladder ascending to the sky and establishing a direct contact between the dreamer and God closely resemble the ascending notes of a musical scale. Indeed, unlike English, in many other languages, e.g. German and Italian, the same word (“Leiter” and “Tonleiter”; “scala”) indicates both a ladder and a musical scale. This dream on the one hand is closely connected with the continuity theory: the dreamer, while flying from Beersheba, received the divine promise of a new land. On the other hand, this dream very effectively represents the strong connections between dreaming, religious beliefs, and music.

### 7.5. Possible future research directions

The study of the connections between music and dreaming is a promising area of research. Issues that may be worthwhile investigating include: other aspects of close similarity between dreaming and music; the connection of both dreaming and music with archetypal ideas of salvation by supernatural agents; the interplay between conscious and unconscious aspects of dream evocation in music; the time shift between musical experiences in waking life and related dream experiences; the subjective assessment of the connection degree between dreaming and musical intervals; and finally pertinent verbal, behavioral and electrophysiological responses.

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