

# The tension-resolution pattern as a basic feature of both music and dreaming

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**Abstract.** Creation of tension, followed by tension resolution is one of the fundamental features of music; a similar cognitive and emotive pattern characterizes the psychological experience of dreaming. A theoretical study of this similarity item between music and dreaming, two universal human activities, can be interesting from two viewpoints: first, it can shed light on both music psychology and dreaming psychology; second, it provides an example of how our mind can exhibit similar ways of working for different functions. The tension-resolution pattern shared by music and dreaming is related to the basic emotional significance of both these experiences and, more generally, to a multifaceted complex set of similarity items between music and dreaming.

**Keywords.** Similarity between dreaming and music, tension resolution, psychophysiology of music, psychology of dreaming, music and emotion.

**Acknowledgment.** The author is grateful to Francesco Giuntini for helpful suggestions and discussions.

## 1 Introduction

Both music and dreaming are characterized by a cognitive and at the same time emotional pattern consisting in creation and resolution of tension. A study of this form of similarity can be interesting from two viewpoints: first, it can shed light on both dreaming psychology and music psychology; second, it provides an example of how our mind can exhibit similar ways of working for different functions. This theoretical paper is organized in the following way. After the Introduction, two sections are dedicated to the tension-resolution pattern in music and in dreams, respectively. Then, a section deals with the relationship between this form of similarity and the basic emotional value of both music and dreaming. Finally, the Discussion section focuses on the motivations and the significance of a comparison between music and dreaming and briefly outlines the connection of the tension-resolution pattern with other aspects of similarity between these two universal human activities.

## **2 Tension resolution as a fundamental aspect of music**

The basic role of the tension-resolution pattern in the creation and perception of music is well known. For instance, it was underlined about fifty years ago in the classic book by Meyer [1, p. 47]: “Music is a dynamic process. Understanding and enjoyment depend upon the perception of and response to attributes such as tension and repose, instability and stability, and ambiguity and clarity.” A typical example of this pattern is given by the fundamental cadences of the music composed during the common-practice period. The authentic cadence and the plagal cadence are characterized by resolution to the tonic, respectively from the dominant function chord and the subdominant function chord: the tonic plays the privileged role of site of final repose, final relaxation. The different forms of the authentic cadence correspond to different degrees of their being conclusive: “imperfect” cadences are less final than “perfect” cadences. The half cadence, ending on the dominant chord, is still less conclusive: it often occurs at the end of the first of parallel phrases, the second phrase ending with an authentic cadence. This implies that the tension-resolution pattern is present at least at two levels, i.e., not only at the end of the chord succession inside a phrase, but also in a phrase succession. This point is confirmed by the role of the deceptive cadence, where the dominant chord does not resolve to the tonic: as Piston [2, p. 183] points out: “the use of a deceptive cadence near the end of a piece helps to sustain or increase the musical interest at the moment when the final authentic cadence is expected. It also provides the composer with an opportunity to add another phrase or two in conclusion.” The tension-resolution pattern can be dealt with in multifold styles: an example is given by the variety of non-standard ways of resolving the dominant seventh, including ornamental, transferred, delayed, and bass resolution. Of course, the use of these cadences goes far beyond the space (Europe and America) and time (Baroque, Classical, and Romantic eras) of the common-practice period: in fact, it includes contemporary popular music, soundtracks, and typical chord progressions in the blues and in jazz tunes. Furthermore, the tension-resolution pattern does not only concern harmony, but also melody, rhythm, and volume, thus constituting a pervasive general feature of music. Among the studies on the physiological correlates of this pattern, we limit ourselves to mentioning the results obtained after segmenting Mozart’s Piano Sonata in E flat major K. 282: the degrees of tension correlated with heart rate and blood pressure [3].

## **3 Tension resolution in dreams**

The building of a dream can be described as performed by a system whose input is a set of memory sources in the dreamer’s mind and whose output is the dream experience [4]. The memory sources generally include recent and remote episodes in the life of the dreamer as well as the dreamer’s current concerns. The dream experience establishes connections between the sources: these connections are often unexpected and can plausibly be accounted for by the following heuristic rule [5]: links are such that negative elements in the current life of the dreamer (which create tension) are

rendered less negative or even reversed into positive (in other words, tension is resolved). The similarity with the tension-resolution pattern typical of music is remarkable: in a dream as well as in a music piece, both creation and resolution of tension are constitutive elements of the psychological experience. This pattern appears as a general feature of dreams: two among the examples given in [5] are the following: a recent unpleasant encounter that had happened while the dreamer was watching horse *races* was linked to her joyful first *races* on a bicycle during childhood; a health problem involving a block of *movement* was linked to the recollection of *skating* as a young girl. This same rule can also be applied to dreams of famous people which have been reported in historical documents. For instance, we can consider Darwin's dream: in 1838, at the age of 29, he dreamed of a corpse coming back to life after a public execution [6, pp. 272-274] and associated this dream with the deep concern he felt due to his theory being strongly opposed by the establishment: the dream experience reversed the concern into the idea that the opposition was due to the "heroic" value of this theory: In fact, in the dream the corpse of the executed man came back to life, in the same way as, in the view of those who opposed Darwin's theory as contrary to the Christian faith, Christ himself came back to life. Another example is given by the dream that determined Francis of Assisi's conversion [7, pp. 142-143]. He had had a miserable experience as a soldier, because during a war between Assisi and nearby Perugia he had been captured and imprisoned, and this was followed by a long sickness: in the dream, he was the owner of a splendid huge palace full of weapons and a leader of soldiers.

#### **4 Emotional implications of the tension-resolution pattern**

The tension-resolution pattern is effectively formulated in formal logical terms in music theory as regards music and in dream-source analysis as regards dreaming. In fact, this pattern has a cognitive basis; however, its significance is strictly emotional: indeed, both dreaming and music have high emotional value.

The dreaming experience is often accompanied by emotions: dream analysis can provide a privileged insight into the emotional state of a person, as has been confirmed by a variety of therapeutic approaches that exploit dream reports and forms of association that the dreamer provides with the dream report. A number of dreams have been analyzed and discussed in the literature (see [8]) which, being able to represent deep emotions with clarity, were able to resolve crucial points in the dreamer's life. It has been hypothesized that dreams, including those, the majority, that are soon forgotten, fulfill a mood regulatory function [9].

An interesting implication of the above considered heuristic rule for dream sources is the following: the emotional valence of a dream, far from being univocal, is at least threefold: (a) valence of the context change established by links between sources (generally positive, according to the heuristic rule), valence of the emotions directly related to the dream (in Darwin's case, negative, because the opposition to his theory caused a serious present concern in his mind), and valence of the emotions felt while dreaming (in Darwin's case, positive, because the dreamer's feeling was of "banter

and joking”, as reported by the dreamer himself).

Music has no immediate logical significance in its own right, its meaning being mainly, if not only, based on feelings. Just as dreams are useful in psychotherapy, music has a powerful therapeutic effect: indeed, music therapy constitutes an advanced field of research and clinical application (see, e.g., [10]). Reviewing neuroimaging and electrophysiological studies on changes induced by music in the human brain, Habibi and Damasio [11] hypothesized that the emotive states prompted by music activate homeostasis-related neural systems. This hypothesis closely resembles the above-mentioned idea of a mood regulatory function of dreaming.

A number of current cognitive studies of music tend to assume the form of neuroaesthetic approaches to the processes that generate the three principal esthetic responses: emotions, judgements, and preference (see, e.g., [12]). In fact, esthetic experiences can be viewed as “emergent states arising from interaction between sensory-motor, emotion-valuation, and meaning-knowledge neural systems” [13]. An important point is that there is no necessary correspondence between the emotion directly expressed and evoked by a musical composition and the emotion of esthetic pleasure: in other words, sadness and joy can be simultaneously felt by the listener [14]. This phenomenon, which also characterizes other forms of art, presents an unexpected similarity to an above mentioned phenomenon for dreaming, which consists in a possible difference, sometimes a reversal, between the emotions associated with the sources of a dream and the emotions actually experienced by the dreamer while dreaming.

## 5 Discussion

The study of music psychology can draw remarkable advantage from analyzing the relationship between music and other basic human activities. For example, interesting results have been obtained by comparing musical perception and linguistic perception (see, e.g., [15, 16, 17]) and by comparing mental representation of music and mental representation of movement (see e.g., [18, 19]). As to the relationship between music and dreaming, interesting analyses are found in the literature in particular with regard to music inspired by dreams (see, e.g., [20]) and to a sort of “dream attitude” of composers while imaging music (see, e.g., the classic book by Seashore [21], and [22]).

From a theoretical point of view, we feel that analyses of forms of similarity between music and other psychological functions can give an interesting contribution not only to music psychology but more generally to the cognitive study of our mind. We feel, however, that the relationship between music and dreaming should be credited with primary importance. The major reason for this point of view is that music and dreaming share the fundamental property of being psychological functions that on the one hand are common to all individual and societies and on the other are not accounted for by a clear survival value, differently from other activities that are obviously related to individual energy supply, individual safety, or species reproduction.

Our analysis has been concerned with a specific point, the tension-resolution pattern. We have observed that this similarity item is connected with the basic emotional significance of both dreams and music. Indeed, dreams and music share a number of

other interesting features, which are interconnected and are specifically connected with the tension-resolution pattern. We now limit ourselves to shortly indicating some of them. While the narrative essence of dreams is obvious, in musical composition the temporal organization of information assumes narrative properties as well, being more syntactical at detailed scale and more plot-like at large scale. A powerful central image can characterize dreams [23] in the same way as a recurrent central motive generally characterizes musical pieces. Dream sources are closely interconnected; correspondingly, in the layout of musical compositions each element is connected with other elements in a complex way. The sources of a dream are located in the dreamer's memory; similarly, the perception of musical elements can evoke the memory of past experiences in the listener's life. Multifold parallel meanings exist both in dreams, which can be over-interpreted, and in music: e.g., a typical structure of common-practice compositions consists of a texture of three or four parts with largely independent melodic lines. The social effects of music are general and impressive; in the same way, certain dreams (e.g., biblical dreams) assume a fundamental cultural value. Finally, from a strictly physiological perspective, the dopaminergic system, which is associated with appetitive interests, plays a remarkable role for dreaming [see, e.g., [24]) as well as for the experience of listening to music (see, e.g., [25]). In the light of these correspondences, the tension-resolution pattern appears as an important element of a multifaceted complex set of similarity items between music and dreaming.

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