Frissons in Dance
BENCE NANAY

ABSTRACT
Musical frissons (or chills) have been at the forefront of both philosophical and psychological research on audience responses to music. The aim of this article is to argue that frissons also play an important role in the experience of dance performances. Following Jerrold Levinson's distinction between sound-quality frissons and sound-structure frissons, the article zooms in on the concept of conflict-induced frissons, which feature prominently in a variety of art forms besides music, from film to literature, and it is of crucial importance for understanding the audience reaction to some dance performances. A case study of Pina Bausch's choreographies is given to illustrate this point.

I. INTRODUCTION
Dance performances have very diverse physiological effects on us. Some of these have been at the forefront of the philosophy of dance, especially kinesthetic ones (Carroll and Seeley 2013; Conroy 2013; 2020; Davies 2013; McFee 2013, 2018; Montero 2013, 2016; Seeley 2020). The aim of this article is to explore another kind of physiological effect of dance performances, one that has been at the forefront of research on the physiological effects of music, but not so much in other arts: frissons.

Some dance performances induce a kind of physiological reaction, often described as thrills, chills, or frissons, which often manifest in goosebumps and a pleasant warm sensation often starting in one's neck and spreading down one's spine. It needs to be emphasized that this is true only of some dance performances and even here of some parts of some dance performances. Frissons are relatively rare, but when they happen, they are a central part of our aesthetic experience. This is not to say that they are the only salient part of our aesthetic experience of dance, not even of our aesthetic experience of the frissons-inducing parts. Dance performances are complex and their experiences are equally complex. So, emphasizing the importance of frissons in our engagement with dance performances does not entail de-emphasizing other aspects of such engagement, for example, the kinesthetic aspects. However, while frissons have been discussed at length in the philosophy and psychology of music, they have not figured prominently in the discussion of dance. The aim of this article is to change this.

I start by giving an overview of the philosophical and psychological literature on musical frissons, drawing on Jerrold Levinson's distinction between sound-quality frissons and sound-structure frissons (Section II). I then elaborate on the latter and examine how this concept could be extended beyond musical examples (Section III) and argue that they play a very important role in some dance performances (Section IV). Finally, I demonstrate the importance of frissons in appreciating some dance performances with the help of a case study of Pina Bausch’s performances (Section V).

II. MUSICAL FRISSONS
Music can move us. But it is not entirely clear what this being moved means. In this article, I focus on the widespread effect music can have that has recently become a major research focus both in philosophy (see Dissanayake 2010; Levinson 2000, 2004) and in psychology (see Panksepp 1995; Salimpoor and Zatorre 2013 for summaries).
Some musical pieces give us the chills. This phenomenon has been referred to as musical thrills, musical chills, or frissons. In terms of introspective reports, people report goosebumps and a pleasant warm sensation often starting in one’s neck and spreading down one’s spine. In terms of physiology, these reported goosebumps are not mere metaphors as they (i.e., skin contractions) constitute a measurable response to some musical pieces (Altenmüller et al. 2006; Grewe et al. 2006; Guhn, Hamm, and Zentner 2007). An even more reliable indicator of musical chills or frissons is pupil dilation (Laeng et al. 2016).

The terminology used to describe this phenomenon is not settled. The term “musical chill” was coined to capture the shivering that often accompanies this phenomenon. But the term “chill” evokes something cold, which seems to contradict the warm feeling in the skin that people often report. The term “thrill” is also used sometimes, but, given that musical frissons are very different from the physiological response to, say, horror films, this term could also be confusing. I use the more neutral term “frisson” in what follows. We know that music we are familiar with is more likely to induce frissons and sad music also tends to be more inductive to frisson experience than music evoking other emotions. But the exact mechanism of how the frisson experience is triggered is not entirely clear.

The first thing that needs to be clarified about musical frissons is that it is not a monolithic phenomenon. There are many different forms of frissons with different temporal profiles, different typical triggers, and different phenomenal feels (Maruskin, Todd, and Andrew 2012). And these different forms of frissons have very different underlying mechanisms (Bannister and Eerola 2018).

While there has been a tremendous amount of empirical research on musical frissons, my starting point comes from philosophy and from a distinction Jerrold Levinson made between two different kinds of frissons. Levinson’s main criterion for distinguishing them is the duration (Levinson 2000, 71). Some frissons happen in a split second and then they are gone. Others linger. And Levinson argues that one major difference between such short-duration and long-duration frissons is that short-duration frissons are triggered by sudden changes in sound quality (especially loudness or pitch), whereas long-duration frissons are triggered by features of sound structure (Levinson 2000, 71). Rather than distinguishing these two forms of frissons in terms of duration (which is a scaled variable), I will use the triggering stimulus as a distinguishing feature. I will talk about “sound-quality frissons,” which often have a short duration, and “sound-structure frissons,” which often last longer.

Levinson is right to point out that empirical research on frissons has been focusing mainly on sound-quality frissons, which are often identified by psychologists as a physiological response triggered by unexpected dynamic changes in tempo, volume, or key (Harrison and Loui 2014). But psychologists are also keen to emphasize that frissons cannot be reduced to one feature of music. Context matters (Grewe et al. 2007) as do the listener’s personality traits (Silvia and Nusbaum 2011). And while some empirical research on frissons explicitly focused on sound-quality frissons (e.g., the research paradigm that examines the connection between frissons and the dopamine system; see Blood and Zatorre 2001; Goldstein 1980; Salimpoor et al. 2011), the research on the link between emotions and frissons (Panksepp 1995; Sachs et al. 2016; Salimpoor et al. 2009; see also Juslin and Västfjäll 2008), and on personality traits (Colver and El-Alayli 2016) paints a more complicated story.

Take the finding that the frequency and strength of frissons are positively correlated with the personality trait of openness, which is defined here as “an individual’s recurrent need to enlarge and examine experience” (Colver and El-Alayli 2016, 214). The experience that gets enlarged and examined is the experience of sound structure, not of sound quality. So, this piece of empirical evidence would make little sense if by frissons we meant sound-quality frissons. But it makes a lot of sense if we considered sound-structure frissons.

Similarly, it is often emphasized by psychologists and neuroscientists who study frissons that most often it is a pattern of features that trigger frissons, not any one individual feature (see esp. Grewe et al. 2007; see also Sloboda 1991). Again, this applies to sound-structure frissons and not to sound-quality frissons. This is not to deny that sound-quality frisson is a real thing. Rather, we need to acknowledge both sound-quality frissons and sound-structure frissons as real physiological phenomena. But they work differently. And, as I argue, they also have very different scopes.

It seems that sound-quality frissons are specific to music. Unexpected dynamic changes in tempo, volume, or key (Harrison and Loui 2014) happen in music and they do not happen in other art forms. It should be emphasized that this does not mean that frissons only happen in a couple of oft-cited
classical musical pieces, like in Schubert’s string quartets. In fact, there is research on frissons in contemporary electronic music, for example (Auricchio 2017). But sound-quality frissons are specific to music (although as I argue below, there are analogous forms of frissons in other art forms, which pertain to the quality of other aesthetically relevant properties (e.g., movements, not sounds).

This may explain why there have been very few studies of frissons outside of music—only a handful of studies on frissons in multimedia (Bannister 2019; see also Grewe et al. 2010) and, to my knowledge, only one on frissons in dance (Christensen et al. 2016). But, if we acknowledge the differences between sound-quality frissons and sound-structure frissons, then we can generalize the latter in a way that would make it possible to talk about frissons beyond music and, what matters most for the purposes of this article, to make sense of frissons in dance.

III. CONFLICT-INDUCED FRISSONS

We have seen that there are very clear markers of what triggers sound-quality frissons: unexpected dynamic changes in tempo, volume, or key (Harrison and Loui 2014). But it is much less clear what triggers sound-structure frissons. And here, I again, rely on a somewhat brief and noncommittal remark by Jerrold Levinson, who argues that an important feature of some forms of frissons is the mixture of positive and negative (Levinson 2000, 68; see also Davies 2004, chap. 7). While he mainly talks about the mixing of emotional overtones of the music in frisson experience, the point can be generalized.

I started this article with a somewhat platitudinal remark about how music can move us. But in the only thorough analysis of the concept of being moved to date (Cova and Deonna 2014), it is argued that being moved is a matter of mixed emotions, where positive and negative emotions are present at the same time. More precisely, being moved is “an unsettling yet soothing form of pleasurable contentment occasioned by the contemplation of a positive value making a stand” (Deonna 2011, 60).

And it seems that something very similar happens in at least some cases of musical frissons.

To generalize from Levinson’s observation, we can say that one musical pattern that tends to trigger sound-structure frissons is a form of conflict, which presents two conflicting musical phrases simultaneously (something that requires distributed attention, see Nanay 2015, 2016). A simple example is the “Erbarme dich” aria from Bach’s St Matthew’s Passion, where we hear an ascending and a descending phrase simultaneously almost throughout the entire piece. The musical conflict between simultaneous ascending and descending forms is an important source of frissons throughout the history of music (leading to a twofold experience of music, see Nanay 2012).

Another example involving a different kind of conflict can be found in the second movement of Schubert’s String Quartet No. 14 in D minor (D. 810), more widely known as the “Death and the Maiden” quartet. Here the conflict is generated by the simultaneity of two phrases, a remarkably flat one (mainly moving by half-tones) and an unusually agile one (leaping over octaves). While this may be the clearest example of conflict-driven frisson in Shubert’s work, his oeuvre is rife with various applications of this effect.

Importantly, the structural feature of conflict-induced frisson can be generalized beyond music. In music, if we follow Levinson’s terminology, this is one form of sound-structure frisson. When generalizing this form of frisson to non-musical examples, I will simply call it “conflict-induced frisson.”

I will give a couple of examples from film and literature before turning to dance. Film, in particular, is a natural place for generating frissons of this kind, given that the image and the soundtrack can easily be brought into the kind of conflict that is likely to induce frissons.

My examples are from French nouvelle vague films, which are a treasure-trove of this way of triggering frissons as nouvelle vague directors (and especially Jean-Luc Godard) seem to utilize this audience reaction deliberately and self-consciously throughout their careers.

In Godard’s 1959 film, Breathless, where we hear the first movement of Mozart’s Concerto for Clarinet and Orchestra in A Major (K. 622) while seeing Patricia’s face in a close-up, as she is contemplating reporting Michel to the police. 1 The music is not at all tragic or melodramatic or ominous—it is (in the recording Godard uses) almost cheerful, in sharp contrast with what is happening on the screen. Our auditory experience of the music is overshadowed by the visual experience of seeing Patricia’s betrayal. This form of conflict is very different from the one in the musical example we considered above inasmuch as it is not induced by a formal conflict (ascending versus descending phrases), but rather by the emotional content of the images and the soundtrack.
The ending of Robert Bresson’s Mouchette (1967) has the opposite effect. The music is a very upbeat excerpt from Monteverdi’s Magnificat from Vespro della Beata Vergine, SV 206 (1610), while the scene is about the desperate suicide of the thirteen-year-old Mouchette. This emotional conflict leads to one of the strongest frisson experience in film history.

On the basis of these two examples, it may seem that any time the images are positively valenced and the soundtrack is negatively valenced or vice versa, this will lead to frissons. This is clearly not so.

Contrast the scene from Breathless with another example from Godard: In Masculin féminin (1966), he uses the second movement of Mozart’s Concerto for Clarinet and Orchestra in A Major (K. 622) (the same piece he used in Breathless), also in a diegetic context. This slow movement is emotional and moving in an almost romantic manner (especially in the recording Godard uses), but the scene itself has nothing of the emotional effects the music suggests. Paul puts on the record, pontificating, in a somewhat ridiculous manner, about the orchestra in the background. This makes our experience of the music much less moving than it would be without the images, but this is unlikely to induce frissons in the audience.

The same consideration applies to the opening, very long scene of Godard’s Le Mépris (1963). We hear Georges Delerue’s extremely sentimental and ominous score, which would serve as the ideal film music in a traditional crime fiction film. But the shot is of a sunny Italian street with a small crew shooting a film scene—nothing ominous, nothing sentimental. Again, our experience of the otherwise emotionally loaded music is made less emotional because of the images, but no frissons to speak of.

To use a less highbrow example, the conflict between image and sound is often used for comical effects in popular media. In an episode of the American sitcom How I Met Your Mother (season 4, episode 2), one of the characters describes the best burger he has ever had with the musical accompaniment of the adagio movement of Mozart’s “Gran Partita” (Serenade No. 10 in B Flat Major, K. 361). The same effect is also used in a number of Monty Python sketches. These contrast cases are important because they show that not all emotional conflict leads to frissons. But some do.

All the examples in this section have involved music. Let me close with two non-musical examples of conflict-induced frissons. Both involve the conflict between the tragic and the comic. Godard again: in the second-last scene of Pierrot le Fou (1965), shortly after Ferdinand found out that he had been betrayed by Marianne, he meets an odd elderly man (played by Raymond Devos) in the harbor, who tells him a hilarious story of how he was trying to hit on a woman repeatedly and utterly unsuccessfully. The conflict here is not between sound and image. But the comic delivery of Devos’s lines is in sharp contrast with Ferdinand’s emotional state and this is what leads to frissons.

I have talked a lot about films, so here is a literary example, from Boris Vian’s L’Écume des jours (1947), which also self-consciously combines tragic and comic elements throughout the book in a frisson-inducing manner. The most salient example comes towards the end, when Chloe’s funeral gets hacked by the priest and his lackeys because Colin could only afford the cheapest funeral package.

In short, unlike sound-quality frissons, conflict-induced frissons happen not just in music, but also in film and literature. And, as I will now argue, they are remarkably widespread in dance.

IV. FRISSONS IN DANCE
The very nature of dance is conducive to conflict-induced frissons. After all, when we are engaging in a dance performance, we (typically) both hear the music and see the movement of the dancers. So, we are engaging with dance performances by means of two sense modalities, audition, and vision. This duality in itself carries with it the possibility—again, not a guarantee, but an ever-present opportunity—of the kind of conflict between audition and vision that would be able to trigger frisson.

In a dance performance, the relation between the visual and the auditory can take a variety of forms. I will go through some common patterns of how this happens before zeroing in on conflict-based frissons in dance.

Some ballet and modern dance choreographies deliberately try to make the movement as synchronous with the music as possible. Two choreographers who are well-known for this way of using the relationship between music and movement are Mark Morris and Jiri Kylian. Both of them tend to adjust their choreography to the music in a (sometimes almost comically) synchronous manner. Take
Jiri Kylian’s choreography “Birthday” for the Nederlands Dans Theater (2006) which uses the music of Mozart’s overture of *Le nozze di Figaro*5. Everything the two dancers do in the kitchen (sneeze, cut the dough, break eggs, etc.) is synchronous with the most important musical features—this often leads to comical effects. This choreography makes the musical features that are accompanied by synchronous visual impulses much more salient (see Krumhansl and Schenck 1997).

But music and movement do not need to be synchronous. Sometimes the visual sense modality does not add to our auditory experience of musical form (by reinforcing it) but rather takes away from it. A complex and sophisticated way of using the relationship between the two is when the visual sense modality makes our auditory experience of the musical form more ambiguous.

The clearest examples of this kind of multimodal effect come from choreographies by Trisha Brown, who very explicitly attempts to make her choreography as asynchronous with the music as possible. Take her choreography for Rameau’s *Pygmalion* (with Les Arts Florissants, Festival d’Aix-en-Provence, 2010).6 The dancers’ movements very deliberately avoid either emphasizing or even providing a counterpoint for the music—they form a parallel, but independent perceptual stimulus. The effect is some kind of dislodgement of the musical forms, including the rhythm and the metric—they become much less clearly defined as a result of the visual experience of the choreography.

Neither of these two ways of using the relation between music and movement (i.e., synchronicity and independence) is particularly likely to trigger conflict-induced frissons. It is important to emphasize that dance performances of these kinds can still lead to strong emotional reactions, even, in some cases, frissons: not conflict-induced frissons, but rather movement-quality frissons (which would be the dance equivalent of sound-quality frissons in music), often induced by the features of the performance (rather than the choreography).

But there is a third way of using music and movement. The movement of the dancers often serves as a counterpoint to the music. It is not synchronous with it, nor is it a completely independent stream of information. Rather, it intentionally contrasts the unfolding of the musical theme.

Take the famous performance of Rameau’s *Les Indes galantes* by Les Arts Florissants, conducted by William Christie and choreographed by Blanca Li and Andrei Serban (2004, Opéra national de Paris). The choreography of the duet “Forêts paisibles” between Zima and Adario in the last act involves very pointed visual gestures against the beat.7 This seemingly simple trick has two consequences for our experience. The first is that our multimodal experience of the music shifts time signature. We hear it as having the time signature of 4/4 instead of the original alla breve time signature (2/2) as prescribed in Rameau’s score. Here what we see (gestures against the beat) makes us experience the formal properties of the music differently.

But the second consequence is a strong frisson experience, induced by the conflict between what we see and what we hear. What we hear is music in alla breve time signature (2/2) and what we see is in the time signature of 4/4. Each time we see the dancers’ movement against the beat, this conflict manifests itself, and it generates a strong frisson experience.

This way of using the relation between movement and music is also typical of the Japanese dance theater genre of *butoh*. In *butoh* performances, formal features of the music are almost always countered with contrasting formal features of the dancers’ movement. Slow is countered with fast, fast with slow, and so on. This is probably the most salient in the performances of the *butoh* troupe, Sankai Juku, especially in their signature piece, *Unetsu* (1986).8

So far, I have talked about one important source of the kind of conflict that generates frisson in dance: the (formal) conflict between music and movement. But another important source (and one that *butoh* dance theater makes regular use of, e.g.) is the conflict between the formal properties of the movement of two different dancers (or, as in Sankai Juku’s *Unetsu*, the movements of a solo dancer and those of a “chorus”).

Just as the relation between the movement and the music can be synchronous, independent, or conflicting, the same goes for the relation between the movement of two different dancers. Classical ballet often indulges in synchronicity, 1960s avant-garde dance of Trisha Brown’s ilk often goes in for complete independence, but what is an important source of frissons in dance comes from choreographies where one dancer’s movements deliberately go against what the other dancer is doing.

Frissons are important for understanding the audience’s reaction to some dance performances. But they are also important for understanding the effect some choreographers deliberately aim for. A very
clear example of the importance of frissons in dance comes from the dance theater performances of Pina Bausch, so I spend the next section giving a case study of the ways in which she uses frissons in dance.

V. A CASE STUDY: PINA BAUSCH

I want to discuss in some detail a choreographer whose work could not be fully understood or appreciated without close attention to the way she uses frissons in dance: Pina Bausch. The first thing to note is that the music Bausch uses for her performances is almost always in itself frisson-inducing music. She uses a fair amount of Schubert, for example (most memorably in Nelken (1982, Tanztheater Wupperthal), where she uses the very same movement of the “Death and the Maiden” quartet I examined above), but even when she uses non-classical music, she tends to choose music that is likely to trigger frissons even without the accompanying movement of the dancers.

And the way her choreography uses the relation between movement and music seems to have the explicit aim of triggering and strong conflict-induced frisson experiences. Here is one example. At the beginning of her Cafe Müller (1978, Tanztheater Wupperthal), the woman's movements almost always seem to be the exact opposite of what is happening in the musical score (of “O let me weep” from Purcell’s The Fairy Queen). She stands still for a long time and then suddenly, when there is a lull in the music, starts running; she makes frantic complicated gestures while the music is slower, and hardly moves when the music gets faster.

The same applies to almost all of Bausch's choreography. Take, for example, one of Bausch's best-known set pieces, Gershwin's “The Man I Love” in her Nelken, where the man's gestures are supposed to express the same meaning as the song's lyrics, but their timing is almost always against the beat. In this example, the auditory experience of the musical form is in conflict with the visual effects, which leads to the frisson experience.

The examples so far were about frisson experiences induced by conflict in formal features: either by the conflict between formal features of the music and of the movement or between formal features of the movement of two different dancers. But Bausch's choreography also uses non-formal conflict as a frequent inducer of frisson experiences. This is especially salient when it comes to her dance duets.

In the opening scene of Cafe Müller, the stage is covered with chairs with very little space in between them to dance. There are two people on stage: the woman (as we have seen) stands still for longer periods of time and then suddenly bursts out in energetic gestures. She does this as if she were blind: starts running as fast as she can in a direction where there are chairs in her way. This is where the other character comes in, who spends the entire scene clearing chairs out of the woman's way. The conflict between the helpless and oblivious woman and the caring and focused man is a strong content-based conflict, which is what triggers the frisson here.

A similar kind of conflict, also from Cafe Müller, is the duet where a third authority figure arranges the limbs of the couple in a classic embracing position, which ends with the woman collapsing, but immediately jumping up to hold the man as tight as possible, which is followed by more arrangements of the limbs, collapse again, jumping up again, in an increasing tempo. Here, the vulnerability of the woman (and the man) is in sharp contrast with the controlling authority figure, and the end result is, again, conflict-induced frisson.

A remarkably long-term conflict-induced frisson is a structural feature of Nelken, which starts with the stage covered with a forest of (fake) pink carnations (thus the title). As the performance goes on, the dancers trample on these carnations, flattening them, and making them look used. The beauty of the dance gradually makes the initially beautiful stage lose its beauty.

I should emphasize that these are just some examples taken from an oeuvre that seems to be geared toward inducing as strong frissons as possible. Unless we take the phenomenon of conflict-induced frissons in dance seriously, we are missing out on an absolutely crucial aspect of Pina Bausch's choreography.

VI. CONCLUSION

More and more research in the philosophy of music has been focusing on the specific effects music can have on the listener. One important example is the growing literature on musical profundity and
the question of what kind of experience exactly is the experience of musical profundity (Dodd 2014; Davies 2002; Hulatt 2017; Kivy 1990; 1997; 2003; Levinson 1992; 1996; Nanay 2021; Reimer 1995; Ridley 1995, 2004; Sharpe 2000; White 1992). Another example is fluency and what effect the experience of fluency has on our listening experience (Belke et al. 2010; Bullot and Reber 2013; Cho and Schwarz 2006; Dokic 2016; Oppenheimer 2008; Reber 2012; Reber, Schwarz, and Winkelmann 2004; Smith and Smith 2006; Winkelmann et al. 2003).

Musical frissons are somewhat different from these as frissons have very clear and unambiguous physiological markers, so the explanandum is more well-defined than that of, say, musical profundity, where there is a lot of space for disagreement about just what piece of music is profound. In spite of this advantage, there are still a lot of unresolved questions about frissons, musical or non-musical. I aimed to show that an important subcategory of frissons, namely, conflict-induced frissons is crucial for understanding central features of audience engagement with some dance performances. This itself is a good reason for devoting more philosophical attention to the more general phenomenon of frissons.11

Philosophy, University of Antwerp, Antwerp, Belgium. Email: bence.nanay@uantwerpen.be

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END NOTES

1 Clip available online: https://www.youtube.com/watch?v=YLtePoTVjp0.
2 Clip available online: https://www.youtube.com/watch?v=VnqsnLCDW_Y.
3 Clip available online: https://www.youtube.com/watch?v=NswfDR7azFI.
4 Clip available online: https://www.youtube.com/watch?v=YeQjC1-KHFQ.
5 Recorded performance available online: https://www.youtube.com/watch?v=Qg8q1VjjeW0.
6 Recorded performance available online: https://www.youtube.com/watch?v=nhrFysQlxA.
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8 Recorded performance available online: https://www.youtube.com/watch?v=ccXpc1R-7sk.
9 The full performance of Cafe Müller is available online: https://www.youtube.com/watch?v=WZd2SkydIXA.
10 Recorded performance available online: https://www.youtube.com/watch?v=Qg8q1VjjeW0.
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