BETWEEN AUDIATION AND EKPHRASIS: PASCAL DUSAPIN'S 'FALSE TRAILS'

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Abstract: This article investigates the prolific deployment of images in Pascal Dusapin's scores of the mid to late 1990s. Using Edwin Gordon's concept of 'audiation' and Siglind Bruhn's concept of 'musical ekphrasis', as well as Neal Curtis' ideas on the agency and liveness of images, interdisciplinary interpretations of three Dusapin works are offered, using the score image as the main analytical starting point. Beginning with his Piano Études and *Loop*, these analyses will demonstrate how the score images, derived from the study of 'catastrophe theory', prefigure the control of various musical parameters relating to the relationship of variables in this mathematical concept and its forms. An analysis of String Quartet No. 4, notable for its use of both a score image (of a machine) and textual quotation (from Samuel Beckett's *Murphy*), will then demonstrate how the visual can interact with the verbal to construct a plurality of musical metaphors. The article concludes by positing that Dusapin's elusiveness on the role and function of the images within his work could amount to what W. T. J. Mitchell describes as 'ekphrastic fear': an anxiety that the composer's success amalgamating image and music might have broken down the ontological boundary between them.

Introduction

In an interview with Sidney Richardson in 2017, in which Pascal Dusapin dismissed any connection between Samuel Beckett and his music, he also remarked that:

> [T]here are no illustrations [in the music]. Afterwards, it's true there are the lightning bolts. The shapes of the bolts, but these are false trails. It was a period in which I put in many highly conceptual illustrations of the music... there are images, but always of processes. They are always images of forms.[1]

This statement suggests two things. First, Dusapin may not be specifically referring to his practice of inserting images into the prefaces of his scores in the 1990s but instead to the visual impact of the score itself (a quality commented upon by Ian Pace in works such as *Assai* (1981) and *Quad* (1996)),[2] a contemporary version of the

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[1] Sidney Richardson and Pascal Dusapin, 'Reflections on Form: An Interview with Pascal Dusapin', *TEMPO*, 72, no. 283 (2017), p. 35.
[2] Ian Pace, 'Never to be Naught', *Musical Times*, 183, no. 1857 (1997), pp. 17 and 19.

medieval practice of Augenmusik (eye music).[3] Second, Dusapin seems to be turning away from the direct influence of visuality, subsuming it within the idea of 'form' rather than something with agency upon the compositional process. Richardson argues that although Dusapin distances himself from the directness of the image, 'the continued presence and sheer number of images attached to his scores seem to indicate that on some level there is indeed a connection between these visual representations and the music itself'.[4] By 'hiding' these images from the general listener as paratexts within the score and evading discussion of their role within the compositional process except as 'false trails', Dusapin makes it difficult to categorise his work of this period within a framework of musical–visual interaction.

Dusapin's choice of titles further complicates matters: they do not allude directly to visual stimuli but adhere to orthodox genres such as String Quartet No. 4 or abstractions such as *Loop*. Generic labels from the nineteenth and early twentieth centuries such as 'programme music' and 'tone poem' are also inapplicable, and the concept of an 'ekphrastic music', researched extensively by Siglind Bruhn, may be more appropriate. 'Ekphrasis', a term deriving from the Ancient Greek word 'description', is bound up with the representation of one work in a foreign medium, as in John Keats' poem *Ode on a Grecian Urn*. Bruhn calls this 'transmedialisation' and describes the act of musical ekphrasis as 'the musical representation of a text created in a non-musical sign system'.[5] She surveys many composers' responses to paintings and other artworks, from Respighi and Botticelli to John McCabe and Marc Chagall and, more recently, Marta Ptaszyńska's response to the work of Max Ernst,[6] examining textual interaction and the cultural contexts and techniques of the various painters and composers.

Unlike these transmedialisations, however, Dusapin's 'false trails' are not based on what might traditionally be described as 'artworks': the images in his scores include mathematical graphs (Piano Études), theoretical biological and applied mechanical diagrams (*Loop* and String Quartet No. 4) and conceptual philosophical drawings (*Quad*). Nor are there attributions given for the images, further shrouding their role in mystery. This is not so unusual if one considers how other works are derived from non-art stimuli: Iannis Xenakis (Dusapin's former teacher), for example, used architectural elements of design to generate material in his work *Metastasis* (1954); and it is these sorts of interactions, and the use of visual stimuli not generally associated with traditional visual art, that inform my concept of a 'graphical ekphrasis', in which spatial aspects of images are closely incorporated into compositional designs.[7] Common to all Dusapin's images is their dynamic quality: they represent things or ideas in states of isolated movement; they have objective and demonstrable precedents and consequents. Dusapin's choice of these momentary

[3] For a well-known example see Baude Cordier's *Belle, Bonne, Sage*, Chantilly Codex (Chantilly, Musée Condé MS 564).
[4] Sidney Richardson, 'Form and Exhaustion in Pascal Dusapin's *Quad* – In Memoriam Gilles Deleuze' (Ph.D. dissertation, Duke University, 2018), p. 192.
[5] Siglind Bruhn, ed., *Sonic Transformations of Literary Texts: From Program Music to Musical Ekphrasis* (Hillsdale: Pendragon Press, 2008), p. 8.
[6] Bruhn, 'Musical Ekphrasis: The Evolution of the Concept and the Breadth of its Application', in Esti Sheinberg & William P. Dougherty, eds, *The Routledge Handbook to Music Signification* (London: Routledge, 2020), pp 345–358.
[7] Thomas Metcalf, 'Labyrinths, Liminality, and Ekphrasis: The Graphical Impetus in the Music of Kenneth Hesketh', *TEMPO*, 75, no. 295 (2021), pp. 45–71.

scientific images is another means by which to understand their role in the musical–visual interaction. As Neal Curtis suggests: '[t]reating pictures as if they were alive is necessary because of their uncanny presence. Pictures and images are anxiety inducing not just because they seem to be animated, but also because they threaten to collapse the boundary between truth and falsity, reality and illusion.'[8] This pictorial anxiety is at the heart of Dusapin's unique use of image and music, but may also explain why it was a short-lived aspect of his compositional practice, from which he subsequently distanced himself.

This article will argue that the musico-psychological concept of audiation is bound up in Dusapin's music with notions of the 'picture' or 'image' as a live and agential thing that affects the musical materials of the pieces in which it appears. Holistically embracing the image as part of audiation in the creative process and performing a kind of ekphrasis enables new insights into Dusapin's music. Audiation, coined by pedagogue Edwin Gordon, 'is to music what thought is to language... we audiate when we hear and understand in our minds music that we may or may not have heard but are reading in notation or are composing or improvising'.[9] The term has been more generally applied to the contemporary compositional process by Roger Redgate, who describes audiation as 'initial apprehension of sound or musical image in the mind of a composer'. Redgate adds that 'any form of setting down inevitably references some kind of audiative image... a strong, almost visual, imagery associated with audiation',[10] and in this sense audiation seems elusive, a part of the composer's creative process that remains intangible.

The images seen on the cover pages or in the prefaces of Dusapin's scores, particularly from the mid-1990s, might seem to refute this quasi-mystic notion by foregrounding the audiative image before the music is presented. As such, the images open up a way of comprehending and interpreting Dusapin's work not only from the point of view of the specialised analyst, but also from the point of view of the performer, and perhaps even the listener, since audiative processes contain a 'reconstructive element'.[11]

A consideration of two phenomena, catastrophe theory and rotary-to-linear motion, embodied in three of Dusapin's score images, will demonstrate that Dusapin's conceptual images forge a referential link with one another, like that in music composed after artworks. This referential link is indicative of the preservation or translation of sign systems across different media and so we can analyse these texts as a kind of ekphrasis. Where audiation is a dynamic creative impulse, or rationalisation of a musical idea, ekphrasis exists as something innately concerned with the transmedial preservation of sign systems. Audiation in this context exists between composer and image and so ekphrasis is dependent on the analysis of the text created through that interaction, in an attempt to reconstruct the audiation process. In his work *What Do Pictures Want?*, art historian W. J. T. Mitchell asks, 'what does the picture lack; what does it leave out? ... what does it need or demand from the beholder to complete its

[8] Neal Curtis, '"As If": Situating the Pictorial Turn', *Culture, Theory, & Critique*, 50, nos 2–3 (2009), p. 97.

[9] Edwin Gordon, 'All about Audiation and Music Aptitudes', *Music Educators Journal*, 86, no. 2 (1999), p. 41.

[10] Roger Redgate, 'Do You Hear What I Hear? Audiation and the Compositional Process', *Principles of Music Composing*, 18 (2018), p. 21.

[11] Ibid., p. 19.

work?'.[12] Audiation is not a process of setting the inherently visual aspects of pictures to music but of using them as a window into musical discovery.

Dusapin has alluded to the function of images within his music:

> One part of my work hinges itself on this allegorical representation [between seeing and hearing forms in the inner ear]. As if the invention of my music passes by a mental filter of a production of geometric forms that are very supple, to an image of a dance of abstract figures interlacing lines, masses, angles, vortexes, blocks, volumes.[13]

The mention of 'mental filter' can be read through an audiative lens. Redgate describes the alteration within the compositional process of parameters predetermined or generated through audiation as 'audiative scanning'.[14] Richardson's assessment of Dusapin's working method demonstrates this mental filter at work:

> Dusapin's tendency towards 'hypertrophy' [exaggerated complexity] necessitates that he revise and reduce passages created by his runaway machines, but by doing so he emphasizes the composer's choice in the process of making cohesive forms.[15]

Audiative scanning for Dusapin is thus a statement of compositional choice; the 'runaway machines' are processes which generate musical material (and in String Quartet No. 4 an image of a machine is used in the score). What Dusapin presents in his final scores is a result of deliberation and a careful management of his agency. This in turn makes his inclusion of images in the finished score so interesting and, to re-use Curtis' phrase, 'anxiety inducing', because they foreground some kind of intertextual relationship, and Dusapin himself seems aware of this:

> Music is written, it is built on a paradox that it is actually drawn. And you cannot, after a certain amount of experience, forget the fact that it is a transduction from a graphic world to the intangible world of sounds. It is therefore necessary to constantly transcode from one representation to another. What, then, is the ontological relationship you have with your thinking?[16]

I will now discuss three of Dusapin's works, Piano Études, *Loop* and String Quartet No. 4, using the score images as the main analytical entry point. These analyses are by no means exhaustive, but rather offer an approach that celebrates the interaction of the extra- and intra-musical elements of these scores as representations of the composer's esoteric and conceptual approach to composition.

Catastrophe Theory

Dusapin's admiration for the mathematician and catastrophe theorist René Thom is well documented.[17] In catastrophe theory, catastrophes

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[12] William J. T. Mitchell, *What Do Pictures Want?* (Chicago: University of Chicago Press, 2005), pp. 49–50.
[13] Pascal Dusapin quoted in Richardson, 'Form and Exhaustion in Pascal Dusapin's *Quad*', p. 201.
[14] Redgate, 'Do You Hear What I Hear?', p. 21.
[15] Richardson, 'Form and Exhaustion in Pascal Dusapin's *Quad*', p. 204.
[16] Pascal Dusapin et al., 'Pascal Dusapin: composer avec la vie', *La Cause freudienne*, 70, no. 3 (2008), p. 221. ['La musique, elle est écrite, elle est construite sur un paradoxe qui, en fait, est qu'on la dessine. Et vous ne pouvez, au terme d'une certaine expérience, oublier le fait qu'il s'agit d'une transduction d'un monde graphique au monde immatériel des sons. Il faut donc transcoder en permanence une représentation par une autre. Quelle est alors, ontologiquement, la relation que vous entretenez avec votre pensée?']. My thanks to Fraser McQueen for his help with translations.

represent violent, sudden changes that are the discontinuous responses of systems to smooth changes in external conditions.[18] Well-known examples include the fight-or-flight reaction in dogs when under threat[19] and the point at which a bridge collapses due to a continuous increase of weight acting upon it. Gilles Deleuze (another of Dusapin's noted influences)[20] is also interested in the mathematical reorientations that are present in Thom's theory and, as Simon Duffy suggests in his remarks on Deleuze and mathematics, one can see a similarity between mathematical thinking and processes of musical audiation:

> In any proposition, the predicate is contained in the subject; however, Deleuze contends that it is contained either actually or virtually. Indeed, any term of analysis remains virtual prior to the analytic procedure of its actualization. What distinguishes subjects is that although they all contain the same virtual world, they don't express the same clear and distinct or actualized portion of it.[21]

One could argue that a visual representation of an image is the 'virtual' and the collection of processes that express that image aurally constitute its 'actualisation'. The audiative scanning, therefore, is that 'analysis' that expresses a different portion of the same virtual (or visual) world.

Piano Études

Dusapin clearly alludes to catastrophe theory through images in the front matter of the scores of his Piano Études (1999–2002) and Loop (1996), but their meanings and formal procedures are quite different because of the 'type' of catastrophe they invoke. Thom highlights 'seven elementary events' that are formed when graphing the curves generated through the theory when gradually increasing the number of mathematical parameters: the fold; the cusp (see Figure 1); the swallowtail; the butterfly; and the hyperbolic, elliptical and parabolic umbilic.

The image used in Piano Études represents a 'cusp' catastrophe model (like that in Christopher Zeeman's formulation of 'fight-or-flight') with two control dimensions and one behavioural dimension. Another key feature of the cusp catastrophe system is 'bifurcation', the moment when continuous changes in one of the independent variables yield sudden, qualitative changes in behaviour (such as the shift from fight to flight). Richardson has pointed out that the phenomenon of 'bifurcation' is also present in other works by Dusapin, such as Cascando (1997) (which also uses a score image):

> Bifurcation is one of the principle features of Dusapin's process of what he terms 'non-variation'. For him it is a means of pivoting, of dividing a musical

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[17] See Dusapin and Maxime McKinley, *Imaginer la composition musicale. Correspondance et entretien 2010–2016* (Paris: Septentrion, 2018), p. 107, and Dusapin's paper written upon his appointment to Chair of Artistic Creation (*Chaire de création artistique*) at the College de France (2006–2007), www.college-de-france.fr/media/pascal-dusapin/UPL18515_49.pdf (accessed 16th September 2022), p. 874.

[18] Vladimir Arnold, *Catastrophe Theory*, tr. R. K. Thomas (Berlin: Springer-Verlag, 1984), p. 14.

[19] For a full explanation of this application, see Christopher Zeeman, 'Catastrophe Theory', *Scientific American*, 234, no. 4 (1976), pp. 65–68.

[20] Ivanka Stoïanova, 'Pascal Dusapin: Febrile Music', *Contemporary Music Review*, 8, no. 1 (1993), pp. 183–96.

[21] Simon Duffy, *Deleuze and the History of Mathematics: In Defense of the 'New'* (New York: Bloomsbury Publishing, 2013), pp. 33–34.
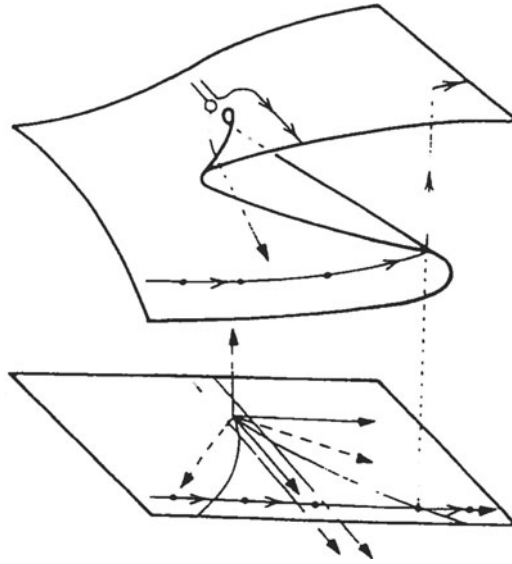
Figure 1:

Visual representation of a 'cusp' catastrophe; Pascal Dusapin, Piano Études, front matter.

pathway in two, which in turn causes him to make a subjective decision on where the music will lead.[22]

This is the 'mental filter' mentioned earlier: a process of audiative scanning which is inherently subjective. The cusp catastrophe in Piano Études presupposes a 'subjective decision' involving two specific variables that may enact a change in behaviour – not so much a bifurcation, more the termination point of a generative process that causes a catastrophe – and my analysis of Étude No. 1 uses cusp catastrophe as the lens through which to examine the score.

The formal organisation of Étude No. 1 clearly demonstrates the catastrophe system: the first 23 bars of the piece utilise a two-part contrapuntal texture that can be read as exhibiting a single behaviour through balanced musical variables, in this case duration and rhythm. The first point of catastrophe occurs in bar 24, when an accented four-note chord appears at a *sfff* dynamic, the most forceful attack so far (see Example 1). This enacts a sudden change in the density of the music, to three- and four-note chords and, eventually, an abandoning of the pitch centre G♯/A♯. The catastrophe is the change in density, which brings the section to an end, and there is also a behavioural shift, from a linear, contrapuntal texture to a more chordal section in bars 26–33, with the caesura in bar 26 as a kind of 'reset' that more clearly delineates the new behaviour. The elements of the music other than attack density also display the 'changing values' of the variables, and this is perhaps most clearly seen in the dynamics. Figure 2 shows the dynamic 'rates of change'.

As Figure 2 shows, dynamic volatility increases as the section progresses, and this is matched by a gradual shortening of durational values, resulting in faster, more intense music. This parallels the cusp catastrophe in bar 24, but these variables and behaviours do not always exist in a state of flux and catastrophe. Elsewhere Dusapin explores his two designated 'types' of behaviour in a stable

[22] Richardson, 'Form and Exhaustion in Pascal Dusapin's *Quad*', p. 227.

Example 1:

Opening and first 'catastrophe' in Pascal Dusapin, Étude No. 1 (slurs in bars 24–25 have been omitted for clarity).
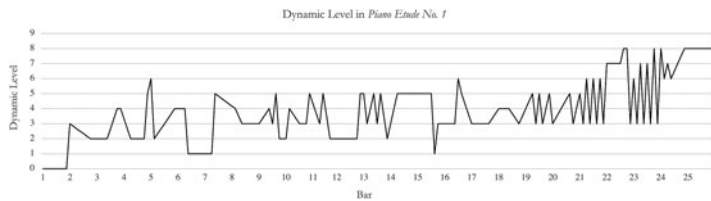

Figure 2:

Rate of change of dynamic level in bars 1–25 of Étude No. 1 [*ppp* = 1, *fff* = 8].

context. Table 1 offers a reading of Étude No. 1, noting behavioural types, variable changes and catastrophe points.

The cusp catastrophe can similarly inform a reading of the ending of Étude No. 1. The sostenuto pedal is used for the first time in the piece to catch its densest attack, an aggregate of the final section's harmony that has been accumulating through slow additions of pitches. This texture has been one of continuous, smooth change, and the sudden behavioural change causes both a catastrophe and the end of the piece itself. One might even argue that the impossible crescendo and question mark in bar 105 are consequences of this catastrophe (see Example 2).

Throughout Étude No. 1 each subsequent section represents a rebalancing of gestures that are presented in the first two sections, such as repeated notes, tremolo figures, etc. Moreover, the use of the Hauptstimme markings on repeated material (particularly the G♯/A♯ sequence from the opening of the piece) allows for a contextualisation of the surrounding variables, and provides an audible reference point through which to hear the effect of the changing control variables (see Example 3).

To some extent this piece resists thematic analysis since the thematic ideas in bars 2 and 7 consist only of interval classes 1 and 2, a motivic unit whose traces are too numerous to generate a meaningful

Table 1:
Commentary on Étude No. 1

Bars	Behaviour	Two Variables	Catastrophe	Comment
$1–26_3$	Linear, independent	Dynamic; rhythm	bar 24_4; coincides with highest dynamic level, largest pitch set, and shortest durational unit.	
$26_4–33_3$	Chord–driven	Dynamic; rhythm		Variables more stable, behaviour is consistent and shift to new behaviour clearly delineated with a cesura in bar 33
$33_4–57_3$	Linear, characterised by repeated notes (idea introduced in previous section)	Harmony (through pedal); tempo	bar 47–48; subversion of repeated note idea through use of grace notes and new LH notation.	Tempo is unstable and the changes are not consistent in duration. Dynamics constantly in a state of flux, which one could read as a stable rate of change, albeit high. Harmonic rate of change increases over section. Initially stable on the foregrounding of i.c. 3 (arguably a symptom of the repeated note behaviour) – catastrophe enacted through absence of i.c. 3 in bars 47–48, followed by further harmonic shifts until the use of a tempo modulation ends the RH melody at bar 52 with the same i.c. 3 (now re-spelled as an augmented 2$^{\text{nd}}$).
$57_4–66_3$	Chordal	Texture (lowering of density); Hauptsti0mme		Hauptstimme appears twice in exact repetition at same dynamic. Stable reduction of density from three– to two– to one–note attacks.
$66_4–72_4$	Linear, tremolo, repeated notes	Rhythm (between measured and unmeasured); Hauptstimme		
$73–85_3$	Linear; repeated notes	Tessitura; dynamics		Represents a possible logical continuation of first section (should the catastrophe not have happened) hence similarities between final section and second section.
$85_4–106$	Chordal, new tempo	Density; pedalling	bar 105_4	Section stable until bar 105, where sostenuto pedal causes catastrophe.

Example 2:
Pascal Dusapin, Étude No. 1, final bars.
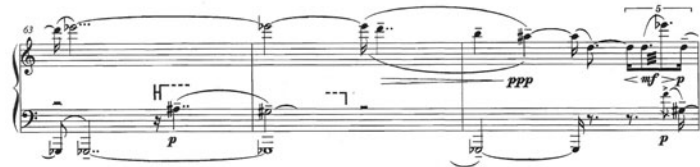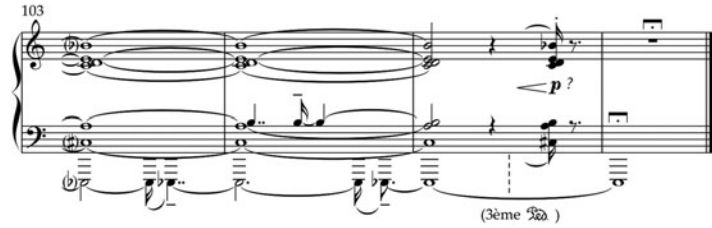
Example 3:
Examples of Hauptstimme in contrasting textures of Étude No. 1, bars 63–70.

analysis. Perhaps this is a characteristically playful shifting of musical attention to anything other than the theme, enabling us to focus on how the innate parameters of music (dynamic, rhythm, pitch set, density) are used in constructing these catastrophic situations. Many of the other études begin in a similar way (see Examples 4 and 5), with 'thematic' gestures based around interval classes 1 and 2, presented in situations that resist thematic analysis in favour of a more parameter-led one.

An étude may be defined as a 'study' of some musical, formal or technical parameter. In using an audiative image derived from catastrophe theory to contextualise all his Piano Études, Dusapin not only situates the work within an aesthetic domain that could have ekphrastic tendencies, but also allows for analytic readings that consider both musical and extramusical elements. Pragmatically, it also allows for a consistency in compositional approach (useful given the work's three-year compositional timespan) so that these works become *study variations*, not only on pianism but on the cusp catastrophe itself.

Loop

Loop offers a more complex exploration of catastrophe theory. Its score image shows all the seven 'elementary' types in a single illustration, and it is also a dynamic image, presenting a step-by-step transformation in 16 images that correspond to the 16 points on the initial representation. Although there is no attribution in the score,

Example 4:
Opening of Étude No. 5.

Example 5:
Opening of Étude No. 6.

Loop's score image is a version of Thom's demonstration of 'unfoldings of the parabolic umbilic' from his *Structural Stability and Morphogenesis* (1975) (see Figure 3).[23]

Unlike the cusp catastrophe, which has two control dimensions and one behavioural dimension, the parabolic umbilic catastrophe has four control dimensions and two behavioural dimensions. This analogy is established in the conception of the work, which is for two groups of four cellos, and Dusapin's clear allusion to the formal aspects of the score image can thus contextualise my analytic observations on the parabolic umbilic catastrophe. The use of eight cellos also echoes the *Piano Études* in focusing directly on variables and behaviours rather than on ensemble timbres.

There is an additional layer of meaning to consider in *Loop*, however, because of the complexity of modelling this catastrophe in music: the increased variables and multiple behaviours of the parabolic umbilic make it far more complex than the cusp catastrophe, which has defined catastrophe points.

The title, *Loop*, reveals that the true conceptual thrust of the work is hysteresis, and Tony Atkins and Marcel Escudier's definition of the term directly connects title and concept: '[w]here a change in some property of a physical system *lags behind* changes in the phenomenon causing it, shown. . . by the formation of a hysteresis loop'.[24] This theory is applied to a wide variety of phenomena, such as magnetism and elastic stability, but its most significant application for this study is to catastrophe theory, where Zeeman describes it as occurring when 'the transition from the top sheet [or one behavioural outcome] does not take place at the same point as the transition from the bottom sheet to the top one'.[25] In essence, it is the lag within the system, and the most important notions in any reading of *Loop* are temporality and displacement, treating the divergence of material as a sounding of the hysteresis loop. This explains Dusapin's use of a dynamic score image,

[23] René Thom, *Structural Stability and Morphogenesis*, tr. David Fowler (Reading, MA: Benjamin, 1975), p. 86.

[24] Tony Atkins and Marcel Escudier, eds, 'Hysteresis', in *A Dictionary of Mechanical Engineering* (Oxford: Oxford University Press, 2013).

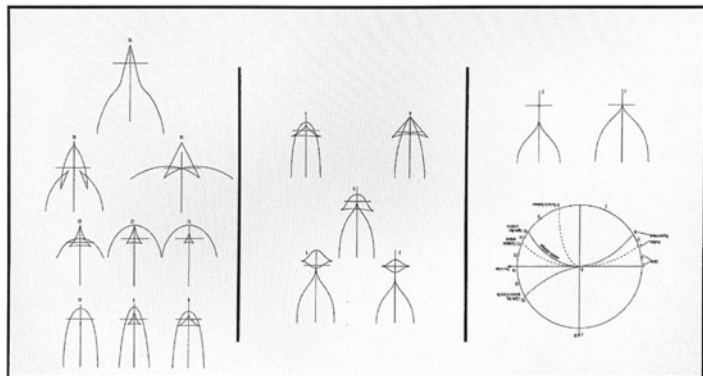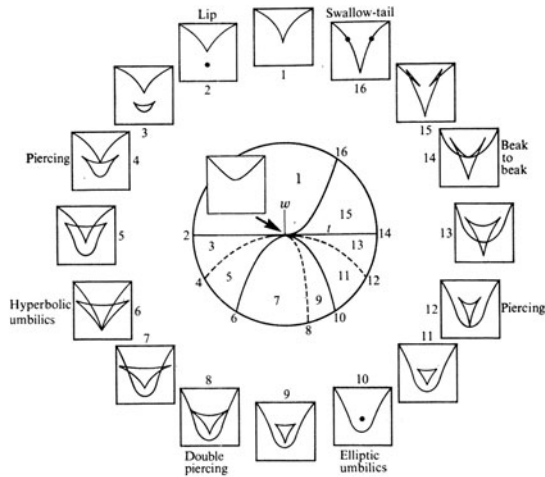[25] Zeeman, 'Catastrophe Theory', p. 76.

Figure 3:
'Unfoldings of the parabolic umbilic'
from René Thom's *Structural
Stability and Morphogenesis* (above)
and their rearranged presentation in
the score image of *Loop* (below).

showing movements between states of the parabolic umbilic catastrophe, and the referential link between the piece and its title can only be understood by engaging with this score image; visuality becomes as crucial to composition and analysis as to criticism.

The notion of displacement, or lag, is initiated from the opening of the work, in which each cello joins the rhythmic pulsing of a unison D in staggered entries (see Example 6). The behaviour, or regularity of the system, is established at bar 6, where the ensemble is playing in total unison. Changes in the system emerge in bar 10, where cello 1 begins playing octave leaps. This could be viewed as a 'stretching' of register (in an elastic sense) – pulling the tessitura of the piece up. This gesture is gradually taken up by the other players, apart from cellos 7 and 8, who exhibit a different behaviour: unsynchronised pizzicato, which is also briefly taken up by cello 5 in bar 13.

There is, therefore, a divergence, or bifurcation, of two behaviours (a feature of the parabolic umbilic) from the single unison D gesture, but it is one in which all parts unify (or reset) once more at bar 14, shifting down to a unison B and beginning processes of divergence once more. The subsequent addition of the new pitch implies further displacement, with cellos 1 and 2 retaining the octave D gesture while cellos 3–8 play demisemiquaver passages introducing a third pitch: A#. From this point, cellos 2, 6, 7 and 8 seem to lag behind 1, 3, 4

Example 6:
Pascal Dusapin, *Loop*, bars 13–15₁.

Example 7:
Pascal Dusapin, *Loop*, bars 23–25.

and 5 until bar 28, where they return to a homophonic semiquaver pulse (see Example 7). The changes in the musical system (polyphony/rhythmic displacement) lag behind the phenomenon causing it (expanded pitch sets, register, etc.).

The antiphonal spacing of the ensemble specified in the score helps to compound the sonic effect of the hysteresis loop. Much like the Hauptstimme in the Piano Études, the dramatic homorhythmic tutti sections (bars 46–52, 89–99) and reduced 'sectional' passages (such as bars 136–42) act as points of (re)contextualisation for the positioning of variables and behaviours, communicating the work's extramusical impetus.

In both *Loop* and Piano Études, Dusapin uses score images relating to catastrophe theory as an audiative impulse in the compositional design of the music, generating musical systems which shape his conception of the work. As I have shown, one can glean analytical insights by engaging with these images, and it might be argued that these pieces offer an ekphrasis of catastrophe theory, through the use of

particular models and phenomena: a transmedialisation of a visualised mathematical concept to music. This extension from audiation to ekphrasis relies on the notion that the visualisations, or concepts, of catastrophe theory hold up as ekphrastic 'texts' in their own right, and the recontextualisation, or decentralisation, of traditional concepts of 'art' in ekphrastic process is thus an important qualifier in any such discussion, confirming Roger Savage's suggestion that '[i]n place of an interpretation aimed at divining the composer's intentions, ekphrastic speculation locates the work's meaning in a general communicative economy of circulating signs'.[26]

Dusapin's score images immediately situate Piano Études and Loop within a variety of signs that cross disciplinary boundaries and offer new modes of analysis which prioritise the deconstruction or interrogation of the composer's audiation process. Such processes enable the construction and communication of the works' metaphorical and more general hermeneutic content. This kind of musical analysis also has significant links with the fields of visual studies and art history, where scholars such as Mitchell and James Elkins have made the case for the inclusion of scientific images into the canon of images worth studying for their affective and ontological contents, extending the focus of visual literacy beyond traditional artworks.[27] Lawrence Kramer offers this observation on the purpose of ekphrasis in itself:

> Ekphrasis is accordingly a technique of visualization, a means of training the eye. But it is also a hermeneutic technique, a means of commenting on what is visualized and therefore of training the eye to see meaningfully.[28]

I would argue that these sorts of rhetorical and ekphrastic exercises allow for a means of training both eye and ear, of hearing meaningfully when image and music are intertwined, on the inevitability of the 'almost visual imagery' within an audiation process proposed by Redgate.

String Quartet No. 4

By combining both score image and quoted text, String Quartet No. 4 can be read as a fusion of more multiple ekphrastic and audiative processes. The score image, this time of a rotary – linear-motion automaton (see Figure 4),[29] is supplemented by a quotation from Samuel Beckett's Murphy:

> The rock got faster and faster, shorter and shorter, the gleam was gone, the grin was gone, the starlessness was gone, soon his body would be quiet. Most things under the moon got slower and slower and then stopped, a rock got faster and faster and then stopped. Soon his body would be quiet, soon he would be free.[30]

Much as in Loop, the instrumental forces match the score image, which shows four wheels turning to produce linear motion of a belt. The four wheels are analogous to the four instruments of the quartet, and perhaps this characterisation as parts in a machine affects the instruments' deployment within in the music. The piece includes only three instances of double-stopping (in bars 153 and 157–59),

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[26] Roger Savage, *Hermeneutics and Music Criticism* (New York: Routledge, 2009), p. 75.
[27] James Elkins, *Six Stories from the End of Representation* (Stanford: Stanford University Press, 2008).
[28] Lawrence Kramer, *Musical Meaning: Toward a Critical History* (Berkeley: University of California Press, 2002), p. 16.
[29] An example might be a crank which then moves a conveyer belt when rotated.
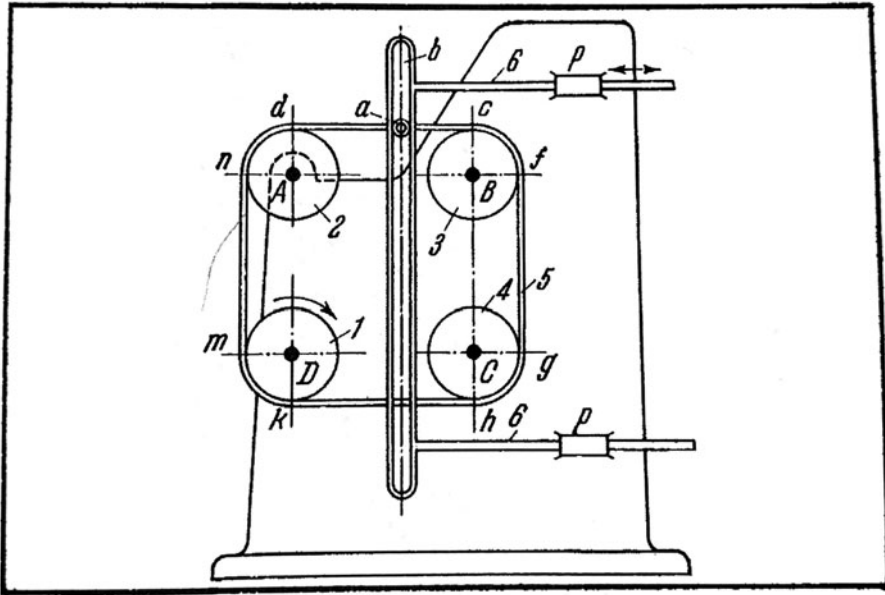[30] Samuel Beckett, *Murphy* (London: Routledge, 1938), pp. 9, 252–53.

Figure 4:
Score image for String Quartet No. 4.

and this too could be related to the audiative image of a 'machine' in which there are only four elements to generate linear motion. This is also manifested harmonically: chords are generated by singular contributions from each instrument to create a balanced density, the harmony conceived linearly, rather than vertically. Each wheel in the machine is identical, inevitably so in order to function correctly.

String Quartet No. 4 is defined by two types of material: oscillations between pitches ('rocking' motif/rotary motion) and longer, more lyrical passages of linear motion. A notable feature is the use of repetition, particularly of the rocking motif. Rhythmically, this can be seen in extended passages of rocking, such as bars 89–104, where the quartet is either in total homophony (at the unit of a demisemiquaver) or very near to it (see Example 8). This can also be rationalised in the use of imitation, in passages such as bars 62–71, where the cello repeats its solo oscillation figure using the same pitches and rhythms, or in bars 72–77, where violins 1 and 2 are in frantic imitation in very close proximity, taking small cells of the (now extended) motif (see Example 9). They are independent parts, but at the same time they share much of the same material, despite having slightly differing pitch sets. Indeed, it is worth remembering that repeated motion is fundamental to the concept of oscillation, and this is at the heart of the work.

Extended linear passages are less common. They either appear as elongations of oscillating pitches, as in bars 21–33, or as much longer, expressive lines, as in bars 119–37. The placement and generation of these lines links to the mechanical image presented in the score: the rotary motion must generate enough energy for the linear motion to be realised. Thus, bars 119–37 could be heard as the consequence of the accumulated rotary motion from bar 70 (see Example 10); it is a powerful textural moment created by the logic implicit in the score image.

Example 8:
An example of rocking motion in String Quartet No. 4.

Example 9:
Example of imitation as 'repetition' in String Quartet No. 4.

Example 10:
Extended 'linear' solo in String Quartet No. 4.

In his study on the use of repetition in Beckett, Rubin Rabinovitz analyses the passage that is used in String Quartet No. 4 (which appears twice in the novel) and points out its paradoxical nature: 'Murphy's rocking chair does not slow down before stopping'.[31] This has a parallel at the end of the quartet, where the rocking figure returns in violin 2 and viola but is quicker than it was in the previous section; the piece ends on an unmeasured tremolo and a trill (an even quicker form of oscillation). Indeed, this final section is almost entirely based on repetition, with the cello repeating its oscillating D–C♯–D figure, albeit much more slowly, until it stops playing in bar 243 (Example 11).

Rabinovitz suggests that in the passage of the novel quoted in String Quartet No. 4, Beckett is using repetition as an obfuscation or deferral of meaning: 'the recurring passages… make it clear that the narrator is intentionally withholding details of the story'.[32] The same could be said of the cryptic use of score images and quotations in Dusapin's work, which prefigure many elements of the formal aspects of the music: in this case, the roles of the specific instruments,

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[31] Rubin Rabinovitz, 'Murphy and the Uses of Repetition', in *On Beckett: Essays and Criticism*, ed. Stanley E. Gontarski (Cambridge: Cambridge University Press, 2013), p. 56.
[32] Ibid.

Example 11:
Increased oscillation speed which ends String Quartet No. 4.

Example 12:

An example of interruption/silence in between the rocking motif of String Quartet No. 4.

and of repetition as both a poetic and mechanical allegory. Indeed, by quoting a passage that is repeated in *Murphy*, Dusapin presupposes multiple interpretations of musical meaning. At the beginning, is Murphy's 'quiet body' his unconscious self, after falling out of the rocking chair, or is it, at the end, his eventual death? In this way, String Quartet No. 4's use of a score image that links directly to Dusapin's concept of his 'runaway machines' provides a transmedialisation of both the structural and symbolic elements of *Murphy* that makes such comparisons from text to music clear.

The silences, or sudden terminations of passages, that occur throughout the quartet (see Example 12) can be interpreted in relation to both the work's literary source and its mechanical, visual one, despite the narrative ambiguity that I have noted. In the quotation from Beckett's novel there is a connection between the rocking of Murphy's chair and the notion of the 'quiet body': either unconsciousness or death. Thus, the cessation of the 'rocking motif' suggests Murphy's changed mental state: in this case, his absence. Indeed, the stop/start nature of the music could also be aligned to the innate essence of kinematic motion, which requires some sort of input to generate an output (in this case, the turning of the wheels). If there is no rotary motion, then nothing can occur; hence, the absence of rotary motion in the music enacts a silence. If one understands the crux of this piece to be rotary vs linear motion, and if rotary motion enables linear motion, then the termination of rotary motion is the termination of the whole. The dependence of one type of motion on another is analogous to the connection of rocking and unconsciousness/death in *Murphy* (and, indeed, to the use of connected variables in catastrophe theory in the *Études* and *Loop*).

In this way, images that presuppose formal aspects of an initial audiation (such as linked variables) can be reconciled with ekphrastic processes (through signifier/signified relationships). A further level of interpretation can be derived from a remark of Dusapin's about String Quartet No. 4, that it tells 'the story of four brothers (played by the four instrumentalists) who "look alike" and yet "can be told apart" by their individual personalities. Thus, their "likeness" is dramatised by the unison in the first eight bars of the work.'[33] Yet this remark is also characteristic of Dusapin's elusiveness in discussing the works of this period, as it seems to connect to neither the score image nor the Beckett quote.

[33] Jacques Amblard, *Pascal Dusapin: L'intonation ou le secret* (Paris: Musica Falsa, 2002), p. 244 ['De même pour Dusapin, le Quatuor n° 4 raconte l'histoire de quarre frères (incarnés par les quatre instrumentistes) qui se « ressembient » et pourtant se « distinguent » chacun par une personnalité propre. Ainsi, leur « ressemblance » est théâtralisée par l'unisson des huit premières mesures de l'œuvre.'].

Conclusion

> If we do not try to reach a precise understanding of the situation, we run the risk of understanding it too abstractly. A picture still has an external model, is still a window.[34]

This article has offered new ways of analysing those Dusapin compositions that employ images before the music. This idiosyncratic approach also demonstrates the considerations that arise from the perspectives of audiation and ekphrasis in the context of the image and visuality. The score image, to borrow from the Deleuze quote above, is a 'window' into both creative process and aesthetic understanding. By interrogating audiation through visual aspects, certain formal characteristics may appear that then can aid an ekphrastic interpretation of a given work. In this way, one might argue that 'from audiation to ekphrasis' is akin to 'from criticism to analysis', given the latter's reliance on sign systems and logical structures; both are concerned with the derivation of meaning. Indeed, the approach taken here can be expanded to other works with score images, such as String Quartet No. 2 (1988–89), *Apex* (1995) and *Cascando* (1997), and insights gleaned from these analyses may inform Dusapin's work more generally, acting as lingering audiative threads.

It is of interest, however, to return to Dusapin's distancing from the relationship of the image to his music and ask the question 'why?'. Mitchell's notion of an 'ekphrastic fear' may provide a fruitful explanation, described as 'the moment of resistance or counterdesire that occurs when we sense that the difference between the verbal and visual representation might collapse and the figurative, imaginary desire of ekphrasis might be realized literally and actually'.[35] Despite the sophisticated relationship between Dusapin's compositional systems and his images, the music is not fundamentally about the images, in the way that a tone poem or programmatic work might be, but rather about their uneasy liveness as images generally. The audiative interaction between these images and Dusapin asks questions, provokes and both mystifies and rationalises. Mitchell continues: '[e]kphrastic fear perceives this reciprocity [free exchange and transference between visual and verbal art] as a dangerous promiscuity and tries to regulate the borders with firm distinctions between the senses, modes of representation, and the objects proper to each'.[36] This paradoxical success in transmedialising images into music obliges the composer to reassert their separate ontologies (material/sonic).

Dusapin has argued that 'Picasso never theorized about his work, but his work determined and created theoretical spaces',[37] and the discursive spaces and interpretations offered through the analyses of images and text in this article resonate with Dusapin's notion of composition as a 'theoretical act'. This is the utility in the rhetorical gesture of Dusapin's 'false trails': to re-evaluate, recontextualise and expand aesthetic terms in, interdisciplinary ways that will open up new methods of criticism, analytical technique and communication through the examination of novel theoretical spaces within the context of the interaction of image and music.

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[34] Gilles Deleuze, 'The Fold', *Yale French Studies*, 80 (1991), p. 232.
[35] William J. T. Mitchell, *Picture Theory* (Chicago: University of Chicago Press, 1994), p. 154.
[36] Ibid., p. 155.
[37] Dusapin quoted in Stoïanova, 'Pascal Dusapin', p. 186.