

## Remembering Music

This article considers the role of memory in musical understanding through an exploration of some of the cognitive resources recruited for musical memory, with a special emphasis on processes of categorization and on the different memory systems which are brought to bear on musical phenomena. This perspective is then developed through a close analysis of the ways memory is exploited and expanded in Tōru Takemitsu's *Equinox*, a short work for guitar written in 1993.

Early in the second volume of Marcel Proust's *À la recherche du temps perdu* (translated as *In the Shadow of Young Girls in Flower*) the narrator – having overcome a bit of awkwardness with Charles Swann – has become an intimate of Swann's household, and the favored friend of his daughter Gilberte. On some days he joins the Swanns as they while away the afternoon at home, but on most occasions he joins them for a drive in the Bois de Boulogne. On occasion, before she changes her dress in preparation for their drive, Madame Swann sits down at the piano:

The fingers of her lovely hands, emerging from the sleeves of her tea gown in crêpe de Chine, pink, white, or at times in brighter colors, wandered on the keyboard with a wistfulness of which her eyes were so full, and her heart so empty. It was on one of those days that she happened to play the part of the Vinteuil sonata with the little phrase that Swann had once loved so much.<sup>1</sup>

This event provides Proust with an opportunity to reflect on the challenges of listening to music, and in particular on the difficulty of making something of a new piece on our first encounter with it. He observes:

What is missing the first time is probably not understanding but memory. Our memory span, relative to the complexity of the impressions that assail it as we listen, is infinitesimal, as short-lived as the memory of a sleeping man who has a thousand thoughts which he instantly forgets, or the memory of a man in his dotage, who cannot retain for more than a minute anything he has been told. Our memory is incapable of supplying us with an instantaneous recollection of this multiplicity of impressions. Even so, a recollection does gradually gather in the mind; and with pieces of music heard only two or three times, one is like the schoolboy who, though he has read over his lesson a few times before falling asleep, is convinced he still does not know it, but can then recite it word for word when he wakes up the following morning.<sup>2</sup>

Proust's novel is, among other things, a study of the processes and products of memory. Music – as an art form that exemplifies both the challenges to and resources of memory – occupies a central place within this sprawling work, in many cases serving as an emblem for thought itself. What is particularly notable is Proust's attention to the role of memory in our apprehension of music – as he says here, what is missing on our first encounter

1 Marcel Proust, *In the Shadow of Young Girls in Flower*, ed. Christopher Prendergast, trans. James Grieve, New York: Penguin Books, 2002, 103–104.

2 Proust, *In the Shadow of Young Girls in Flower*, 104.

with a new piece is not understanding but memory. Now, within the broader context for this passage, and indeed the novel as a whole, one of the important aspects of memory is the anchor it provides for experience. Indeed, while the Vinteuil sonata means, at this point, almost nothing to the narrator, it is for Charles and Odette Swann the symbol and the bearer of the magical little phrase that haunts their love, and that can capture their attention at unexpected moments. There is, however, another aspect to memory to which Proust returns again and again, and that is the part memory plays in making ongoing experience comprehensible. In the present passage this is manifested in his observation about memory's inability to deal with all of the impressions with which it is assailed, which is then countered with a near-miraculous capacity to retain that which we thought had eluded us.

It is this latter aspect of our memory for music – which, in truth, involves the means through which memory makes possible our comprehension of the patterned sounds basic to musical expression – that I would like to explore through a consideration of some of the general cognitive capacities that are recruited for musical memory, and through musical analysis. With respect to the first of these, I should like to begin with a review of ways processes of categorization are manifested in musical organization, for I believe such categories provide a structure through which memories can be managed and negotiated. I shall then turn to a brief sketch of some of the key features of memory that, together with processes of categorization, shape our understanding of music. With respect to musical analysis, I shall try to show some of the ways composers exploit musical memory through an account of Tōru Takemitsu's *Equinox*, a brief work for guitar written in 1993. My aim in both of these sections will be to provide a framework for a fuller understanding of the part memory plays in our comprehension of music – to set out some of the more mundane aspects of cognitive processing that allow us to make sense of a piece on even our first encounter with it, but also to celebrate some of the mystery through which musical works can come to invade our very being.

### Aspects of Musical Memory (I): Processes of Categorization and Memory

I take as my point of departure a passage so deeply ingrained in many musicians' memories that they may find it difficult to recall a time when it was novel: the opening of the Prelude to Richard Wagner's *Tristan und Isolde*, shown in Example 1. In the passage, an evocative melodic line given voice by the cellos and English horn is accompanied by harmonies provided by the clarinets and bassoons and a rising chromatic line in the oboes. Hans von Wolzogen, in his classification of the motives from *Tristan und Isolde*, called the melodic line stated by the cellos and English horn the *Leidensmotiv* (the Suffering motive) and the oboes' rising chromatic line the *Sehnsuchtsmotiv* (the Yearning motive).<sup>3</sup> The harmony on the downbeat of bar 2 – the subject of discussion from practically its first sounding – is of course the *Tristan* chord.

Carl Dahlhaus observed that all of these elements are intertwined to such an extent that taking any one of them out of context distorts the whole.<sup>4</sup> In previous work I focused on the *Leidensmotiv* as a means to illustrate how processes of categorization shape our understanding of music, but my guiding assumption – and one which conformed with Dahlhaus's observation – was that the musical materials of the opening should be thought

3 Hans von Wolzogen, *Thematischer Leitfaden durch die Musik zu Richard Wagner's Tristan und Isolde, nebst einem Vorworte über den Sagenstoff des Wagner'schen Dramas*, Leipzig: Schloemp, 1880, 15. This work was also published in an English edition as *Guide Through the Musical Motives of Richard Wagner's Tristan and Isolde, with a Preface on the Legend and the Poem of Wagner's Drama*, New York: Schirmer, 1889.

4 Carl Dahlhaus, *Richard Wagner's Music Dramas*, trans. Mary Whittall, Cambridge: Cambridge University Press, 1979, 63.

## Example 1

Wagner, Prelude to *Tristan und Isolde*, bars 1-3.

of as a whole.<sup>5</sup> The account that follows, then, remains in the spirit of my earlier analysis but with the focus shifted from the *Leidensmotiv* to the complete assembly of musical materials shown in Example 1, which provides an opportunity to illustrate two aspects of the processes of categorization through which humans organize their understanding of the world.

The first of these is a preference for a level of categorization that is at the middle of a taxonomy – what has come to be called the basic level.<sup>6</sup> The importance of basic-level categories is reflected in the shape taken by our everyday conversation: were I to refer to the creature who demands to go out each morning to patrol our garden, I would probably describe him not as ‘the diminutive gray and white cat’ or ‘the domestic quadruped’ but simply as ‘the cat’. The first description provides highly specific information (picking this cat out from a host of other cats), the second description provides very generic information (classing the animal with any number of domestic quadrupeds), while the third description – which, in this context, constitutes a basic-level category – makes a compromise between these two that adds greatly to the efficiency of communication. In a similar fashion, regarding bars 1–3 of Wagner’s prelude as a holistic unit represents a compromise between information that is highly specific (such as von Wolzogen’s enumeration of various of its components) and information that is highly generic (for instance, that the passage exemplifies orchestral music of the later nineteenth century), and in this way is very much like a basic-level category.

The second aspect of categorization concerns what are called typicality effects: although it is common to think of categories as having crisp boundaries delimited by a set of necessary and sufficient conditions through which category membership is determined, the categories that humans actually use in daily life have a graded membership, with individual members characterized as being more or less typical of the category as a whole.<sup>7</sup> In the case of the category ‘cat’, some members will be very typical, and thus firmly inside the category – for most people, the typical cat is the domestic model we have encountered on sidewalks, at the homes of friends, or that have been a part of our life. Other members of the category ‘cat’ will be less typical, and thus farther away from the core of the category – included here might be unusual breeds of domestic cats (such as the Manx cat) or various species of cat which persist in the wild. Finally, other exemplars – such as tigers, or Louis Carroll’s Cheshire cat – will stretch the very limits of category membership. All can be considered members of the category ‘cat’, but some fit the category better than others. With respect to music, an example of something like typicality effects can be seen

5 Lawrence M. Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, New York: Oxford University Press, 2002, 49–50.

6 Eleanor Rosch, ‘Principles of Categorization’, in: *Concepts: Core Readings*, ed. Eric Margolis and Stephen Laurence, Cambridge, MA: MIT Press, 1999, 191–196; Zbikowski, *Conceptualizing Music*, 31–36.

7 Rosch, ‘Principles of Categorization’, 196–201; Zbikowski, *Conceptualizing Music*, 36–49.

in restatements of the materials of bars 1–3 in the continuation of the prelude. As shown in Example 2, where the first entry begins with a minor sixth leap from A to F, the second begins with a major sixth leap from B to G $\sharp$ , and the third begins with a major sixth leap from D to B but then continues in a slightly different fashion, its last note reversing the pattern of descending half steps. Again, all can be considered members of the same category to which measures 1–3 belong (which, setting aside concerns about specific *Leitmotive*, we might simply call ‘the opening theme from Wagner’s Prelude to *Tristan und Isolde*’), but some more clearly instantiate signature features of that category (such as the opening minor-sixth leap) than do others.

Example 2

Wagner, Prelude to *Tristan und Isolde*, bars 4–11.

In my previous discussion of this passage I went on to consider further appearances of the opening thematic material from the prelude over the course of the opera as a whole, as well as the way transformations of these materials shaped our understanding of Wagner’s musical argument.<sup>8</sup> I noted that these reappearances typically include three statements of the *Leidensmotiv* (as in the opening of the prelude), something that contributes significantly to our ability to hold that motive in our memories. Two of the rare isolated statements of the *Leidensmotiv* give further testimony to the importance and function of musical memory. The first occurs in the third scene of Act I. Isolde, recounting to Brangäne how her wrath against Tristan was turned to pity in her first encounter with him, sings ‘Er sah’ mir in die Augen. Seines Elendes jammerte mich! – Das Schwert – ich ließ es fallen!’ (‘He looked into my eyes. His anguish touched my heart! The sword – I let it fall!’). As shown in Example 3a, the middle phrase is sung to a modified version of the *Leidensmotiv*.<sup>9</sup> This statement begins, unlike any other, on G4, and the chromatic passage that leads away from E5 extends to four descending half-steps. And, relatively early in the long dialogue with Tristan that makes up the second scene of Act 2, Isolde sings ‘Wie schmerzte tief die Wunde!’ (‘How deeply the wound smarted!’), again using a less-typical version of the *Leidensmotiv* (as shown in Example 3b). The statement is doubled and ornamented by the strings, and its chromatic descent continues unhindered through six half steps. Both of these atypical appearances of the *Leidensmotiv* – atypical in their form relative to those heard in the prelude, and atypical in their isolation – function as remembrances of the motive rather than statements of it.

Carl Dahlhaus, in comparing the treatment of themes in the first movement of Anton Bruckner’s Sixth Symphony to Johannes Brahms’s method of developing variation, noted Bruckner’s use of a similar strategy. When Bruckner returns to a theme, the correspondence with the original version is often only approximate. Dahlhaus comments:

8 Zbikowski, *Conceptualizing Music*, 51–58.

9 Measure numbers are given by scene; page numbers refer to the Dover reprint of the C. E. Peters 1911 edition of the score: Richard Wagner, *Tristan und Isolde*, New York: Dover Publications, 1973.

## Example 3

Isolated statements of the *Leidensmotiv* from *Tristan und Isolde*:

(a) Act I, Scene 3, bars 135–38, p. 65; ‘His anguish touched my heart!’

Isolde: Sei-nes E - len - des jam - mer-te mich;

(b) Act II, Scene 2, bars 341–43, p. 315; ‘How deeply the wound smarted!’

Isolde: Wie schmerz - te tief die Wun - de!

That the one version is able to substitute for the other means, aesthetically, that instead of developing variation, where each variant represents . . . a consequence of the preceding one and a prerequisite for the next one, Bruckner makes use of an analytically elusive but clearly perceivable similarity by association, which makes the later version seem like a written-out memory of the earlier one. The logic of discourse, as conceived by Brahms, gives way to a system of approximate correspondences.<sup>10</sup>

The preceding analysis of transformations to the *Leidensmotiv* suggests that a more apt comparison would have juxtaposed Bruckner to Wagner rather than to Brahms, for it is ‘written-out memories’ such as those illustrated by Example 3 that contribute much to the power of Wagner’s music dramas: we respond to such memories not with our intellect but in a way that seems far more intuitive, and thus far more deeply felt.<sup>11</sup>

### Aspects of Musical Memory (II): Basic Features of Human Memory Systems

A thorough exploration of the means through which memory is structured – which might provide a framework through which we could account for the fleeting yet profound recollections exploited by Wagner – is an undertaking beyond what I would hope to accomplish here. It is possible, however, to set out some of the basic features of memory that contribute to and constrain musical understanding. Let me begin with the two different kinds of storage used by memory systems, one for ongoing experience, the other for past experience. The first is what is commonly called working memory, which is understood to be a limited capacity temporary storage system that provides support for complex human thought.<sup>12</sup> Although the specification of the limits of working memory capacity is hardly a settled matter, there is converging evidence that it extends to approximately four ‘chunks’ of information, a span that comfortably fits bars 1–3 of Wagner’s Prelude to *Tristan und Isolde*.<sup>13</sup> The second kind of storage used by memory

10 Carl Dahlhaus, *Nineteenth-Century Music*, trans. J. Bradford Robinson, Berkeley: University of California Press, 1989, 273.

11 Walter Frisch makes a similar argument for the compositional strategies used by Schubert in the last of his instrumental compositions; see Frisch, “‘You Must Remember This’: Memory and Structure in Schubert’s String Quartet in G Major, D. 887”, *The Musical Quarterly* 84/4 (Winter 2000): 582–603.

12 Alan Baddeley, *Working Memory, Thought, and Action*, Oxford: Oxford University Press, 2007, 6–7.

13 The responses to Nelson Cowan’s ‘The Magical Number 4 in Short-Term Memory: A Reconsideration of Mental Storage Capacity’, *Behavioral and Brain Sciences* 24/1 (2001): 87–185 are a case in point; see also Cowan, *Working Memory Capacity*, New York: Psychology Press, 2005, and Baddeley, *Working Memory, Thought, and Action*, chap. 10 and 11.

systems is what is commonly called long-term memory, which is understood to reflect relatively durable changes to synaptic structure. Where working memory stores (and only briefly) a limited number of chunks of information, long-term memory stores more complex relational structures that make possible the interpretation of the information held in working memory. In studies of the role of memory in language comprehension, the current understanding is that the more complex relational structures that are stored in long-term memory are related to syntax.<sup>14</sup> With respect to Wagner's *Tristan und Isolde*, the three-fold recurrence of the thematic material of bars 1–3 functions as a syntactic element in the opera in two ways: first, statements of some version of bars 1–3 will create the expectation that two more statements will follow (which indeed is what typically happens over the course of the opera); second, the simple fact that this material is restated three times suggests that it will be important within Wagner's discourse – that is, that these materials will play a 'thematic' role – a suggestion that will then contribute to the salience of each subsequent restatement (even if, as in the passages shown in Example 3, the statements call forth no further iterations of the *Leidensmotiv*).

Up to this point I have used one word – 'memory' – to make reference to the system through which information is retained for the uses of the organism. There is, however, good evidence that human cognition makes use of multiple memory systems.<sup>15</sup> Consider, for instance, your recollection of three different aspects of the musical materials of bars 1–3 of the Prelude to *Tristan und Isolde*: (1) the relationship between the first note of the *Leidensmotiv* and the last note of the *Sehnsuchtsmotiv*; (2) the way your fingers and hands would move were you to play the passage on the piano; and (3) the emotional affect summoned by this musical passage. Thinking about the first aspect of the passage would require that you summon your memory for musical pitches. If your memory for pitches is robust enough you may be able to identify the relationship between the first note played by the cellos and the last note played by the oboes as a major ninth; holding this last note in your memory, you might recognize that, transposed down an octave, it is the same note that begins the second statement of the *Leidensmotiv* in bar 4. Thinking about actually performing the passage (the second aspect I singled out) would require that you summon your memory for the motor skills required to do so; many readers may find that this sort of recollection leads to 'playing' the passage on an imaginary piano keyboard. Thinking about the third aspect would require that you summon your memory for the way this passage makes you feel, which might also involve its place within the landscape of emotions evoked by Wagner's vast opera.

The differences between these kinds of memory – which require capacities for the recollection of pitch relations, for finely-graded motor movements, and for affectual states – suggest that 'memory' is far from monolithic. It also bears mention that these capacities appear to be different from those required for the recollection of the story of Wagner's opera, or the color of the cover to the *sämtliche Werke* edition of *Tristan und Isolde*, or what it would feel like to hold that volume in your hands. The discrepancies between these sorts of recollections and those prompted by a reflection on the musical materials of bars 1–3 would seem to indicate that the memory systems required for music are different than (but in some cases overlapping with) those required for linguistic or visual media.

14 Baddeley, *Working Memory, Thought, and Action*, chap. 8.

15 The approach to multiple memory systems that I develop here follows that of David Rubin, 'The Basic-Systems Model of Episodic Memory', *Perspectives on Psychological Science* 1/4 (2006): 277–311.

On the view I have developed here, our memory for musical events is intimately tied up with the cognitive capacities that enable us to collect sequences of musical events into categories. These capacities make it possible to retain essential musical information as we listen (which is one way to characterize the function of working memory) as well as to compare one category of musical events with another (something I take to be fundamental to a principled account of musical syntax). To these more prosaic aspects of musical memory should be added the more poetic possibilities raised by the embodied experience of making music (the ‘motor memory’ that underlies much of musical performance) and the way listening to music can change our mood or emotional state (a change that then informs how we remember the music). Again, much more could be said about the cognitive resources that support memory and the way these shape our understanding of music, but even these preliminaries can help us better understand the ways music exploits and challenges the resources of memory.

### Takemitsu’s *Equinox* and Musical Memory

Tōru Takemitsu’s *Equinox* is one of a cluster of works for solo guitar that the composer produced prior to his untimely death in 1996.<sup>16</sup> The work is brief, spanning 85 bars and lasting in the neighborhood of five minutes in performance, with a fragmented texture (in which a given musical strategy rarely lasts more than three or four bars) punctuated by ringing harmonics, sudden timbral changes, and notated rests through which echoes of the immediately preceding music resonate. With respect to pitch organization, *Equinox* is typical of many of Takemitsu’s later compositions in that various octatonic collections, as well as pitch structures that make reference to octatonic scales, are clearly in evidence. There are also, however, brief episodes that call to mind musical materials typically associated with tonality, and these tend to inflect and reshape the listener’s understanding of the overall pitch structure. Although aspects of pitch organization will be important for the analysis that I shall offer, my main focus will be on the ways Takemitsu calls on and challenges the resources of musical memory. With this in mind, I shall divide *Equinox* into four sections, based in part on relatively conventional ideas about musical form but also on the resources of memory introduced or exploited in each section. The first section spans bars 1 through 15; the second, bars 16 through 31; the third, bars 32 through 69; and the fourth and final section, bars 70 through 85.

#### Section 1 (bars 1–15)

In a gambit that practically defines the notion of a musical opening, the first portion of *Equinox* introduces musical materials that prove important in the remainder of the work. Perhaps more important for the approach I wish to take here, this section also introduces three of the compositional strategies Takemitsu uses in the course of the work, each of which exploits the resources of human memory in a slightly different way. The first strategy may well be one of the most typical used by musicians, and involves approximate, rather than exact, correspondences between successive groups of musical materials. The second strategy conforms to commonplace notions of recollection, and involves unaltered restatements of clearly identifiable musical materials. The third strategy is more explicitly ‘compositional’ (in the sense of being a common means of extending musical materials), and relies on transposed or augmented restatements of material. In the terms that I developed earlier, this is most like being presented with various exemplars of a particular category: while each exemplar has its individual characteristics, each shares certain characteristics with the others, a sharing which is then the basis for including them all in the same category.

<sup>16</sup> *Equinox* has been published in 1995 by Schott Japan Company Ltd. All excerpts from this work in this article are reproduced by kind permission.

*Approximate correspondences.* As shown in Example 4a, *Equinox* opens with a musical figure that alternates a registrally and timbrally isolated chord with an arpeggiated figure presented in a lower register; the whole of these materials then dissolve toward silence. This figure is restated twice more, each time in a slightly varied form, and is answered (in bar 4) by a contrasting figure that suggests a change in direction (a suggestion realized in the music that follows). Subsequent to a flurry of activity in bars 6 through 10 a version of the opening figure returns in bar 11 and – albeit with the interruption of the *rasgueado* chord in bar 13 – is heard three more times (as shown in Example 4b), a sequence of events that concludes in bar 15 with the same version of the figure heard in bar 3.<sup>17</sup>

Example 4

Takemitsu, *Equinox*.

(a) bars 1–6

(b) bars 11–15

Abbreviations: s.p. = *sul ponticello*; s.t. = *sul tasto*; p.o. = *position ordinary*; l.v. = *let vibrate*. The duration of the eighth note is held constant over the course of all changes of meter.

17 *Rasgueado*, as used here, is a technique in which the guitarist rapidly moves the fingers of the right hand out from the palm to strum the strings. This forceful method of strumming the strings is often associated with the style of playing the guitar used in Andalusian flamenco, although it was also used in guitar music of the seventeenth and eighteenth centuries. See James Tyler and Paul Sparks, *The Guitar and Its Music: From the Renaissance to the Classical Era*, New York: Oxford University Press, 2002, 175–177.

The prominence, within Section 1, of the musical figure first heard in bar 1 would seem to suggest that Takemitsu would like us to remember this figure – that is, to collect its various exemplars into a category of musical events – so that we might understand the music of the subsequent sections. In the next two sections, however, this figure is almost completely absent – there are echoes of the oscillating sixths in bars 17 and 18 and (as a very general class) arpeggiated figures appear in bars 35 through 39 and in bars 53 and 54 – but it is only with the initiation of the concluding section in bar 70 that the figure from Section 1 reappears. This strategy would seem to indicate that, on the one hand, Takemitsu does indeed want us to remember these materials, but more as an anchor within the experiential world proper to *Equinox* than as a topic for musical discourse: that is, the figure is important as a testament to the role and importance of musical memory as a means through which we can comprehend musical experience.

*Unaltered reprise.* The sequence of three chords first heard in bar 5 (and shown near the end of Example 4a) is not one that is, by itself, particularly exceptional. Indeed, each chord, taken on its own, is recognizably diatonic – they are, in order, an E $\flat$  dominant-seventh chord, a C major chord, and (respelling the E $\flat$ 4 as a D $\sharp$ 4) a B dominant-seventh chord. True, as a whole they form a complete octatonic collection with an added B $\sharp$ ; equally true, this series of relatively thick sonorities, presented with a dark timbre (the *sul tasto* indicated by Takemitsu having a particularly sonorous effect with chords voiced as are these), tends to stand out from the surrounding material. What is truly exceptional, however, is the way Takemitsu treats this sequence of chords: voiced in exactly the same way, with exactly the same timbre and dynamics, they reappear in bar 22 (in Section 2) and then bar 80 (in Section 4). (There are indeed very few musical materials within *Equinox* that are restated without alteration, and none across such significant spans of the work.) With these reappearances the sequence takes on an object-like status, such that it comes to serve as landmark notable for the way it stands in relief against the shifting sonic terrain of the work and important as a guide to Takemitsu's musical rhetoric.

*Reprise altered through transposition and augmentation.* The third compositional strategy evident in the first section of *Equinox* is one that builds musical memory in a somewhat more immediate way. As shown in Example 5, the arpeggiated figure in the first half of bar 7 is transposed down three half steps in the second half of the bar. This modified repetition sets the figure off as an element important for musical discourse, an impression reinforced when these materials return in bars 9 and 10, but now beginning a half step higher and with the arpeggio slightly extended. As was the case with the sequence of chords from bar 5, the music of this passage has a strongly octatonic flavor, here produced not so much by the entire collection of pitches (which tend toward, rather than simply instantiate, octatonic collections) but by the prominence of the [0134]-type tetrachord that dominates the beginning of the figure. It might be said, then, that the passage as a whole builds a memory for more-general structures – the arpeggiated pattern first heard at the beginning of bar 7, or the octatonic collections to which the arpeggios make reference – rather than for specific musical elements like the oscillating sixths of bars 1 through 3 or the sequence of chords presented in bar 5.

## Section 2 (bars 16–31)

Consequent to the broadly expository function of Section 1, in Section 2 Takemitsu turns away from any comprehensive development or commentary on the materials set out there and instead builds on the compositional (and mnemonic) strategies and the pitch structures introduced in the opening measures. More specifically, he exploits approximate correspondences between musical materials as well as octatonic collections, but through means different than those used in Section 1. As shown in Example 6, Section 2 begins with a reprise of the flourish of bar 4, followed by a somewhat busy two-bar passage in which a reminiscence of the oscillating sixths from the opening serves as an

## Example 5

Takemitsu, *Equinox*, bars 7–10.

accompaniment for a melody produced through artificial harmonics and worthy of a post-modern music box.<sup>18</sup> In bar 19 the textures then clear to make way for a four-note melody that is repeated immediately (with a varied accompaniment) in bar 20. This melody, which constitutes an [0235]-type tetrachord (another tetrachord strongly associated with octatonic collections), moves an octave lower in bar 21 where it is expanded to an [0236]-type tetrachord. After the pause provided by the rest at the end of bar 21 this latter version of the melody appears, transposed and inverted, in the topmost notes of the sequence of chords in measures 22 and 23. (As noted previously, the first three of these chords are a literal restatement of those of measure 5.)<sup>19</sup>

## Example 6

Takemitsu, *Equinox*, bars 16–23.

18 There are two common techniques for producing harmonics on the guitar. The first involves lightly touching a nodal point on a string with a left-hand finger and plucking with a right-hand finger. The second technique involves stopping a note with a left-hand finger (say at the third fret); the performer then uses one right-hand finger (for instance, the index finger) to touch the appropriate nodal point (most commonly the octave above the fretted note – here that would be at the fifteenth fret) and another (say the ring finger) to pluck the string. Harmonics produced by the first technique are typically called natural harmonics while those produced by the second technique are called artificial harmonics.

19 The contour of the melodic materials of bars 19–23 – in the simplest terms, down-up-down – has clear affiliations with the melody in harmonics of bars 17–18. Because the tetrachords outlined by the melody of bars 17–18 are markedly different from those of bars 19–23, I tend to hear the former as an adumbration of the latter. In his thesis on Takemitsu's *Equinox*, David Settle takes the view that shared contour, rather than tetrachordal content, is the factor which links these passages (as well as other four-note melodies within the piece), and so views these as manifestations of a common theme. See Settle, 'A Look at Form and Pitch Content in Tōru Takemitsu's *Equinox*', unpublished honors thesis, Florida State University, 2008, 10–15.

As shown in Example 7, Takemitsu follows this rather persistent working-out of the melody of bar 19 and its octatonic references with a passage that moves in a markedly different direction. Beginning in bar 24 Takemitsu makes use of a timbral resource unique to plucked string instruments, combining natural harmonics and open strings to create a delicate, other-worldly environment. Given the pitches involved, the chords that are produced make few if any references to octatonic collections; the passage is also remarkable in that, through bar 27, each successive bar traces a falling gesture that dissolves into silence. With, however, the two chords that conclude bars 26 and 27 – the first an [036]-type trichord, the second a [01369]-type pentachord – Takemitsu gradually moves back toward octatonic territory, a trajectory which culminates with the four chords of bars 29 and 30. While these chords and the collection they create do not point in a significant way toward an octatonic collection, the melody formed by their topmost notes (an [0236]-type tetrachord) is the same as that of bars 22 and 23, transposed up a tritone. Bar 31 then recollects the melody of bar 21, presented an octave higher and in harmonics.

*Example 7*

Takemitsu, *Equinox*, bars 24–31.

The musical score for Example 7 consists of two staves. The first staff covers bars 24 to 27, and the second staff covers bars 27 to 31. The music is written in a single melodic line with various dynamics and articulations. Chords are labeled with set-theoretic notation: [036] in bar 26, [01369] in bar 27, and [0236] in bars 29 and 30. Dynamics include *p*, *mf*, and *f*. Articulations include *s.p.*, *p.o.*, *l.v.*, and *i.v.*. The score also includes a *pizz* marking in bar 27 and a *poco* marking in bar 29.

This rather prominent return of a melodic fragment heard earlier, and the re-direction of the music toward the octatonic environment that the fragment helped to establish, reprise the compositional strategy Takemitsu used in Section 1 when the musical figure which dominated bars 1-3 was brought back in bars 11-15. There is also, however, a sense in which Section 2 provides a simulation of an experience in which the role of memory in understanding is brought to the fore. Over the course of bars 16-23 a form of directed discourse develops, one which clearly sets out octatonic materials and also incorporates the sequence of chords first heard in bar 5. The sense of progression engendered by this music is then threatened by the interlude of bars 24-27, and it is only through a willful act of remembrance – which is one way to interpret the distorted and brusque version of the chords of bars 22 and 23 offered by the sequence of chords in bars 29 and 30 – that the continuity of utterance is recovered.<sup>20</sup> This simulation of the role of memory in making experience coherent is one reason I view bars 16 through 31 as a separate section; another reason is provided by the subsequent musical events, for with the flourishes that begin in bar 32 the listener enters into a realm of dreams in which earlier events – some of which now seem far distant – are re-enacted in inexact, highly colored, and seemingly impossible forms.

<sup>20</sup> I am indebted to David Settle for this observation about the close relationship between the chords of bars 22–23 and bars 29–30. See Settle, 'Tōru Takemitsu's *Equinox*', 10.

## Section 3 (bars 32–69)

Although the flourishes of bars 32 through 34 (shown in Example 8) share features with the ascending run of bar 6 (shown in Example 4a), they sound utterly novel: each begins on an off-beat and culminates in an arrival that reverses direction and slows down. (It bears mention that the first two of these arrivals, in bars 33 and 34, reprise the angular [0134]-type tetrachord of bars 7, 9, and 10.) Each successive flourish has a smaller span than the previous one (the first spans two octaves, the last a major tenth), an intervallic compression which suggests that the triplet melody that begins in bar 35 is a culmination of some process; this suggestion is given further credence by the melodic repetitions of bars 36 through 38 and the increase in the dynamic level to *forte*. As shown in Example 8, if bars 36 through 38 are heard as having a compound melody (a hearing supported by Takemitsu's notation), the upper portion of this melody constitutes an [0235]-type tetrachord, connecting it with the melody of bars 19–20. A slightly more oblique reference to the melody of bars 19–20 is provided by the melody of bars 40–41, which retains the duple rhythmic figuration and repetition of bars 19–20 but makes use of an [0134]-type tetrachord with a straightforward descending contour. The allusions to earlier melodies consequent to the flourishes of bars 32–34 are thus rather vague: while these allusions partake of the general compositional strategy and pitch-class content of passages heard previously they are used to construct an environment markedly different from that explored up to this point, with fragments of melody thrust forward more by rhythmic propulsion and repetition than by any obvious connection to previous materials.

## Example 8

Takemitsu, *Equinox*, bars 32–43.

The musical score for Example 8 consists of three systems of music. The first system (bars 32-34) shows a melodic line starting with a flourish in bar 32, followed by two more flourishes in bars 33 and 34. Dynamics are marked as *p*, *mf*, *p*, *mf*, and *p*. The second system (bars 35-38) begins with a triplet melody in bar 35, followed by three more bars of similar triplet figures. Dynamics are marked as *poco mf*, *mf*, and *f*. The third system (bars 39-43) starts with a triplet melody in bar 39, followed by two more bars of triplet figures. Dynamics are marked as *mf*, *p*, and *pp*. A 'Slightly slower' marking is placed above the final two bars, and a '*p espr.*' marking is placed below the final note of bar 43. Brackets above the notes in bars 35-38 and 39-43 indicate tetrachordal groupings: [0235] for bars 36-38 and [0134] for bars 40-41.

The sense of having entered a novel environment is increased with the shift to a slower tempo in bars 42–46, which begins (as shown in the last bars of Example 8) with a brief but clear allusion to G minor. This diatonic reference is quickly absorbed into an octatonic framework which, driven by an accelerating sequential passage that begins in bar 47, builds to the highest note in the work (a C6 in bar 50). Although everything suggests that this should be heard as a climactic moment, the final notes that lead up to and then circulate in the region of the C6 are all harmonics; when combined with the *ritardando* indicated

by Takemitsu, the effect is less one of arrival and more of dissolution. The passage as a whole could be interpreted as providing another simulation of an experience in which memory plays a central role: here, there is an effort at recollection that ends in frustration as the thing to be recalled – that, indeed, *must* be recalled, given the intensity of this effort – slips away into the void of the forgotten. It is at this moment that Takemitsu calls on another resource of memory, one not specifically invoked up to this point. As shown in Example 9, with the return to the tempo primo in bar 52 he sets before the listener a nearly exact rendering of the *Tristan* chord, sounding in the same register and with the same disposition as that of Wagner's original but transposed down a whole step. The moment created by the appearance of this distinctive sonority is then expanded with a reminiscence of the chromatically ascending *Sehnsuchtsmotiv* which leads not toward the dominant seventh chord that Wagner had as the consequent to the *Tristan* chord, but back to the *Tristan* chord itself. It is as though the frustrated effort of memory simulated by bars 47–51 unleashed the remnant of an obsession, an impression strengthened when the music turns away from this remnant to take up, in bars 53–56, a fragmentary recollection of the triplet figures from bars 35–39 which then dissolves into silence.

*Example 9*

Takemitsu, *Equinox*, bars 52–57.

In bar 57 Takemitsu introduces a sequence of two chords that connects with the materials he has introduced up to this point but that also develops into something of a fetish object over the course of the next twelve bars. The chords, which reprise the short-long rhythm used in bars 24–27 but reverse the descending melodic contour that typified those chordal successions, are of set-class type [037] and [0258]. These are the same set-class types as the second and third chords of the three-chord sequence first heard in bar 5 (and restated in bar 22); a more proximate reference for the last chord is the *Tristan* chord, which is also of set-class type [0258]. It must be admitted, however, that these connections are not immediately apparent: given the arrangement of their constituent pitches, the chords of bar 57 do not sound very much like those of bar 5, and the connection between the second of the chords in bar 57 and the *Tristan* chord is complicated by the chords being pitch-class inversions of one another. In any event, the sequence of two chords takes on marked significance in bars 57–69: Takemitsu returns to them – transposed, re-voiced, and with some variability in the pitch-class content of the second chord, but always recognizable as a distinctive pair – no fewer than five times, in between which are reminiscences of the flourishes of bars 32–34 (in bars 60–61), the melody of bars 22–23 (in bars 62–63), and the diatonic excursion of bars 42–45 (in bars 66–67). The effect is of a dream or fantasy interrupted by a sudden fixation on a found object – represented here by the two-chord sequence first heard in bar 57 – which then comes to dominate the course of fancy.

Although bars 32 through 69 of Takemitsu's *Equinox* could be thought of as occupying the place typically taken by the development section of a sonata form – with Section 1 taking the place of an exposition and Section 2 serving as a secondary exposition of certain of the key features and compositional strategies of Section 1 – this portion of the

work operates as a development in only the most abstract sense. The references that are made to material heard earlier (such as the recollection of the ascending run of bar 6 by the flourishes of bars 32 through 34) tend to be oblique and suppressed by compositional strategies that emphasize the independence of the referential token from the thing to which it ostensibly refers. To the extent that these strategies suggest a directed discourse (as might, for instance, the persistent rhythmic figuration of bars 35 through 39), that discourse leads not to materials that connect with those of Sections 1 and 2 but to further digressions (such as the allusion to G minor in bars 42–43 or the introduction of the *Tristan* chord in bar 52). In the final bars of Section 3 the music of the first two sections seems very distant indeed; although such an outcome is highly typical of the compositional strategies used in development sections, Takemitsu achieves it not so much through the careful expansion and exploitation of his earlier materials as through what seem to be deliberate efforts to forget or displace those materials. Were this the musical enactment of a dream, by the end of Section 3 that dream is much more real than the waking reality from which it is supposedly a departure, not least because memories of that waking reality have faded so much that they are themselves little more than phantasmagoria.

#### Section 4 (bars 70–85)

It is with a start – albeit a very gentle one – that we are brought back to the sound world created in the opening bars of *Equinox*. As shown in Example 10, in bar 70 Takemitsu returns to the sustained chords and oscillating sixths set out in Section 1 – bar 70 is in fact an exact reprise of bar 3, bar 71 an extension of its oscillating sixths. With the flourish of bar 72, however, recollections become slightly more confused: although bars 72–74 re-enact the flourishes of bars 32–34, the pitch material of bar 72 replicates that of bar 6, and the intervallic compression evident in the earlier passage (which contributed to the impression of forward motion) is absent. The three flourishes of bars 72–74 lead to the insistent melody of bars 75–77, whose duple rhythm and down-up-down contour replicates features of the melody of bars 19–21 but whose pitch-class content (the whole of the melody constituting an [0134]-type tetrachord) and direct repetition hearkens back to bars 40–41. As did the melody of bars 40–41, that of bars 75–77 leads to a sustained three-note chord; instead of the sonorously-voiced G minor chord of bar 42, however, Takemitsu gives us a diminished chord (the pungency of which is emphasized by his indication to render the chord *poco sul ponticello*). The diminished chord is followed by a modified reprise of the flourish of bar 72 (the pitch classes of the flourish of bar 78, as do those of bar 72, form an [01478]-type pentachord, but the two versions are related by inversion and transposition) which leads not to an angular descending figure or melodic continuation (as have the previous flourishes) but to another statement of the *Tristan* chord, this time sounding a perfect fourth lower than Wagner's original.

As I noted in my discussion of the compositional strategies used in Section 1, the three-chord sequence of bar 5 returns in bar 80; where the first instance of the sequence led to the ascending passage of bar 6, and the second instance (in bar 22) to a re-voiced version of the last chord (in bar 23), this final statement of the sequence leads, in bar 81, to a recollection of the opening harmony of the piece. Gone are the harmonics from the opening as well as the oscillating sixths, having been replaced by a chord voiced low in the tessitura of the guitar and a repeating triplet melody that recalls the first three pitches (also in triplets) of bars 54 and 55. This reprise is followed, in bar 82, by one final reminiscence of the two-chord sequence that dominated the end of Section 3 but which is here expanded to three-chords, the first two of which represent the two different versions of the first chord – either D major or E $\flat$  major – that were used in bars 57–69. The work concludes, in bars 83–85, with two restatements of the triplet melody of bar 81, the first harmonized as it was in bar 81, the second harmonized with a recollection of the harmony of bar 2.

## Example 10

Takemitsu, *Equinox*, bars 70–79.

70 s.t. *pp* *poco accel.* [01478]

73 *in tempo* *mf* *mf* *mf*

76 [0134] *poco s.p.* *mp* *p* *pp* *Tristan (T<sub>s</sub>)*

Concluding Remarks on Takemitsu's *Equinox*

On the view I have developed here, it is hardly surprising that Takemitsu's *Equinox* would exemplify aspects of the general cognitive capacities that are recruited for memory, for our ability to retain and remember fleeting sonic images is key to our comprehension of music. Thus the connection between processes of categorization and the compositional strategies through which Takemitsu organizes his argument (which help to explain relationships – sometimes close, sometimes distant – between musical materials) is, in some measure, to be expected. What is less expected is the way Takemitsu uses these resources to craft a composition that simulates experiences in which the role of memory in understanding is brought to the fore. Although the experiences summoned in Section 2 are relatively straightforward (being confronted with novel and seemingly important material, getting distracted by something else, and then – with some effort – bringing our focus back to what we remember of that important material), in Section 3 the experiences summoned seem more appropriate to dreams, for there materials – sometimes half familiar – develop only to dissolve, are juxtaposed with materials from other contexts (such as the *Tristan* chord), and come to dominate the attention (as does the two-chord sequence first heard in bar 57). This entry into the realm of dreams (if that is what it is) conforms to one of Takemitsu's descriptions of his compositional technique. In a lecture from 1984, in which he was mainly concerned with his orchestral piece *A Flock Descends into the Pentagonal Garden*, Takemitsu observed:

In my music there is no constant development as in the sonata; instead imaginary soundscapes appear. A single element is never emphasized with development through contrast. The listener need not understand the different operations discussed here [which involve relatively straightforward transformations of pentatonic collections (author's comment)]. Actually I have my own theories of structure and systematic procedure, but I wish to avoid overemphasizing these. My music is composed as if fragments were thrown together unstructured, as in dreams. You go to a far place and suddenly find yourself back home without having noticed the return.<sup>21</sup>

21 Tōru Takemitsu, *Confronting Silence: Selected Writings*, trans. and ed. Yoshiko Kakudo and Glenn Glasow, Berkeley: Fallen Leaf Press, 1995, 106.

What is different about *Equinox* is that the return ‘back home’ is made noticeable by Takemitsu’s studied restatement of and reflections on the musical figure from bars 3 and 15 in bars 70–71, a reprise that is followed by a recapitulation of some of the salient events from Section 3. The effect is not unlike that of waking up from a dream but, still in drowsy thrall to its fantastical narrative, recalling and reordering fragments of the dream and thereby connecting its images with the thoughts that occupy our waking world. It is again the resources of memory that make this effect possible, but in this case extending to our memories of memories, and of acts of remembering. *Equinox* thus not only relies on the resources of memory in a relatively conventional way (as does all music), but also offers simulations of the process of reflecting on our own thought processes, a process intimately tied up with the sort of consciousness that is distinctive of human beings.<sup>22</sup>

### Remembering Music

As I noted in my opening comments, Proust’s *À la recherche du temps perdu* – in which music plays such a central role – is a study of the processes and products of memory. Such a study was in keeping with the intellectual climate of his time, for an interest in the resources and idiosyncrasies of memory occupied both scientific research and philosophical thought during the late nineteenth and early twentieth centuries. For instance, the philosopher Henri Bergson (with whose work Proust was intimately familiar) developed a number of his key arguments about consciousness and existence in his 1896 study *Matière et mémoire*.<sup>23</sup> One of the central distinctions Bergson made was between two forms of memory. The first he called ‘motor mechanisms’, which constitute the cognitive and sensori-motor patterns basic to habit. Habit, as an embodied form of memory, offered a means through which organisms could respond in a more or less automatic way to the demands of their environment. Bergson called the second form of memory ‘independent recollections’, and these are concerned with memories of specific events – as Bergson put it, each independent recollection ‘has a date’.<sup>24</sup> Independent recollections are not, by themselves, especially useful to the organism, but a series of independent recollections associated with a particular set of circumstances can eventually give rise to habit. Thus the process of memorizing a piece of music involves gradually building up a series of independent recollections through repeated encounters with the piece until the bodily habit of being able to replay the piece – either through actual performance or through mental simulation – becomes possible.<sup>25</sup> These two forms of memory ultimately provided a framework through which Bergson could explain consciousness (as a species of reflection on awareness).

There are, we have said, two kinds of memory which are profoundly distinct: the one, fixed in the organism, is nothing else but the complete set of intelligently constructed mechanisms which ensure the appropriate reply to the various possible demands. This memory

- 22 I provide a brief summary of recent theoretical approaches to consciousness in my essay ‘Music, Language, and Kinds of Consciousness’, in: *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, ed. Eric Clarke and David Clarke, Oxford: Oxford University Press, 2011, 179–92.
- 23 On Proust’s familiarity with Bergson’s ideas, see Henri Bonnet, ‘Proust and Bergson’, in: *Critical Essays on Marcel Proust*, ed. Barbara J. Bucknall, Boston, MA: G. K. Hall, 1987, 29–50.
- 24 Henri Bergson, *Matter and Memory*, trans. Nancy Margaret Paul and W. Scott Palmer, New York: Zone Books, 1988, 78, 83.
- 25 My example here is adapted from Bergson, who describes the process of learning a lesson by rote (Bergson, *Matter and Memory*, 79–81). It bears mention that Bergson’s example corresponds with one of the images of memory summoned by Proust in the consideration of the role of memory in our comprehension of music which I quoted earlier: namely, that of the schoolboy reading over his lesson a few times in the evening, and then being able to recite it word for word in the morning.

enables us to adapt ourselves to the present situation; through it the actions to which we are subject prolong themselves into reactions that are sometimes accomplished, sometimes merely nascent, but always more or less appropriate. Habit rather than memory, it acts our past experience but does not call up its image. The other is the true memory. Coextensive with consciousness, it retains and ranges alongside of each other all our states in the order in which they occur, leaving to each fact its place and consequently marking its date, truly moving in the past and not, like the first, in an ever renewed present.<sup>26</sup>

For Bergson, then, there were two key roles for memory. The first was to shape action either through habit or through making ongoing experience comprehensible. The second was to deepen conscious experience beyond the moment by guaranteeing a continuity of identity: Bergson believed that every one of the past images indexed by independent recollection remained present within us.<sup>27</sup>

Proust called the sort of memory with which Bergson was concerned ‘voluntary memory’ and believed that its functionality limited its value. Voluntary memory, aimed as it was toward pragmatic concerns, could only give us illusions masquerading as the truth: we remember only the crude outlines of our beloved’s face rather than the essential features that engendered love in the first place.<sup>28</sup> For Proust, the real depth of experience was revealed by what he called involuntary memories (of the sort induced by his central character’s encounter with a tea-soaked madeleine), the sudden and unexpected insights that well up from our unconscious and connect us with our former selves. As Proust noted, the notion of involuntary memory to some extent contradicted Bergson, for it represented a kind of recollection whose purpose was reflection rather than action, and which testified to the essential discontinuities of personal identity.<sup>29</sup>

In their different ways, both Bergson and Proust emphasized the uniqueness of memories and both struggled with the obvious consequence that illimitable unique memories would soon overwhelm us. Bergson, for his part, conceived of the intellect as managing individual memories through a process of generalization, but he was vague about the means through which this was achieved or whether generalization altered the status of individual memories.<sup>30</sup> By contrast, the processes of categorization evident in musical listening offer a way to explain how the individuality of events is attenuated (through assimilation of those events into various categories) and also retained (through the grading of category members according to typicality), and thus how memory is managed. Music also teaches us that there are different sorts of memory beyond those prompted by language or images, such that relationships among pitches, felt patterns of bodily movement, or emotional states can serve as anchors for our experience.

What I have offered here is, of course, only the bare beginnings of an account of the role of memory in our comprehension of music. As a consideration of Takemitsu’s *Equinox* shows, in addition to relying on the relatively mundane cognitive processes that allow us to make something of a musical work on even our first encounter with it, composers

26 Bergson, *Matter and Memory*, 150–151, translation adapted.

27 With respect to the second role of memory I describe, Bergson summarized his view on the two forms of memory as follows: ‘[T]he past appears indeed to be stored up, as we had surmised, under two extreme forms: on the one hand, motor mechanisms which make use of it; on the other, personal memory-images which picture all past events with their outline, their color and their place in time.’ Bergson, *Matter and Memory*, 88.

28 Robert Dreyfus, *Souvenirs sur Marcel Proust, avec des lettres inédites de Marcel Proust*, Paris: Grasset, 1926, 289–290.

29 David Gross, ‘Bergson, Proust, and the Revaluation of Memory’, *International Philosophical Quarterly* 25/4 (December 1985), 378.

30 Bergson, *Matter and Memory*, pp. 154–160.

have also found ways to exploit, frustrate, and re-frame musical memory, and thereby to produce works of art of great expressive power. Remembering music is thus both a challenge and an opportunity: a challenge to understand better the cognitive processes through which we comprehend musical utterances, and an opportunity to explore the compositional strategies through which memorable works are created.