

DONNACHA DENNEHY

Overtones and Light

Poetics and Worldmaking
in *Land of Winter*

Translating solstices

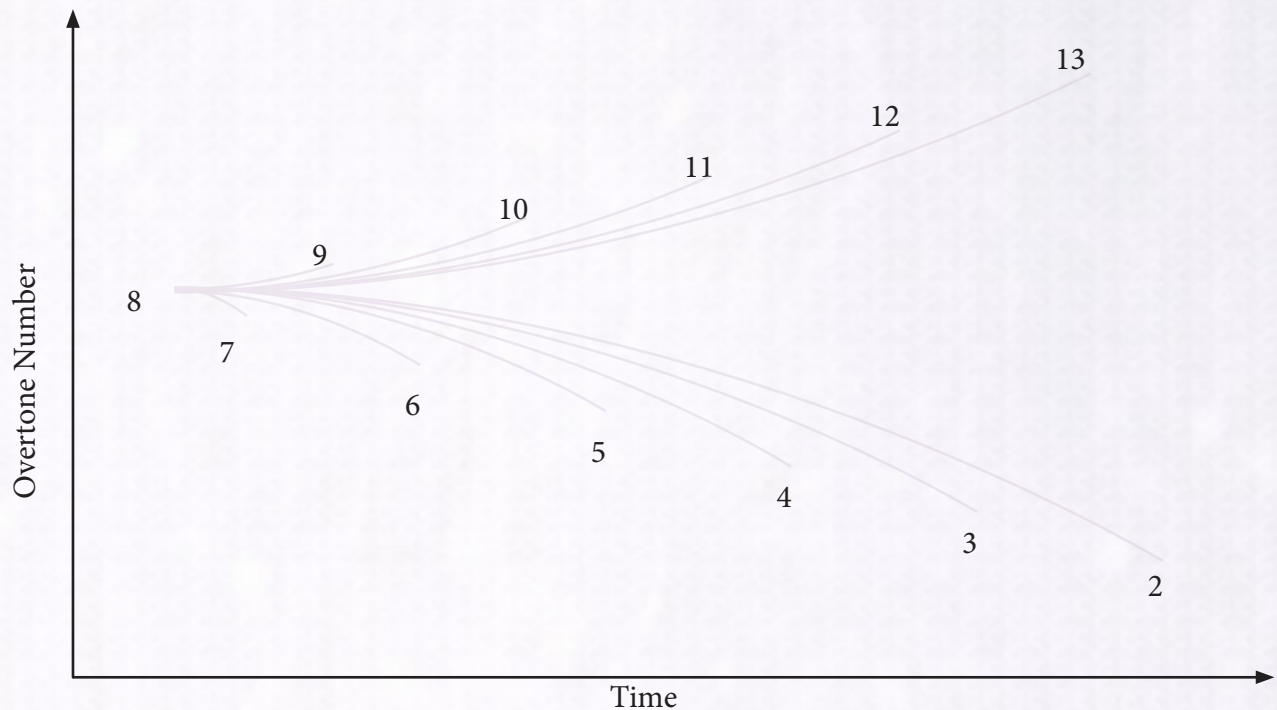
*L*and of Winter starts in December, and culminates at the end of November, ready to begin all over again in winter, as it were. (In Ireland, we used to consider November the start of winter, as it was according to the old Gaelic calendar, but then it shifted to December to be more in line with Europe, so there is always confusion about the exact demarcation of the seasons). One thing is for sure: in winter, the contraction of light is unmistakable, regardless of how you mark its boundaries. It can often feel as if the dark is swallowing up everything in that season.

In this piece written especially for the crack American group Alarm Will Sound I translate the solstices and equinoxes of the year into overtone distributions throughout the ensemble, where each instrument peaks and subsides differently, creating almost unworldly sweeps of color and shade across the aural space. “December” starts with such an approach, concentrating on the higher harmonics especially. It feels cold, crystalline and translucent with darkness enveloping it.

“It feels cold, crystalline and translucent...”

Overtone Blooms

The spectrum that we encounter in the real world (such as we would get from a pitched note on an instrument) usually starts from the fundamental with the higher overtones flowering later and decaying sooner. I twist the shape of these blossoming overtone harmonies however, often starting from overtones higher up and then centrally spanning out from there, with the lower harmonics happening later in the sequence. This little graph showing an example of such spanning out might be helpful (each number refers to the overtone number):

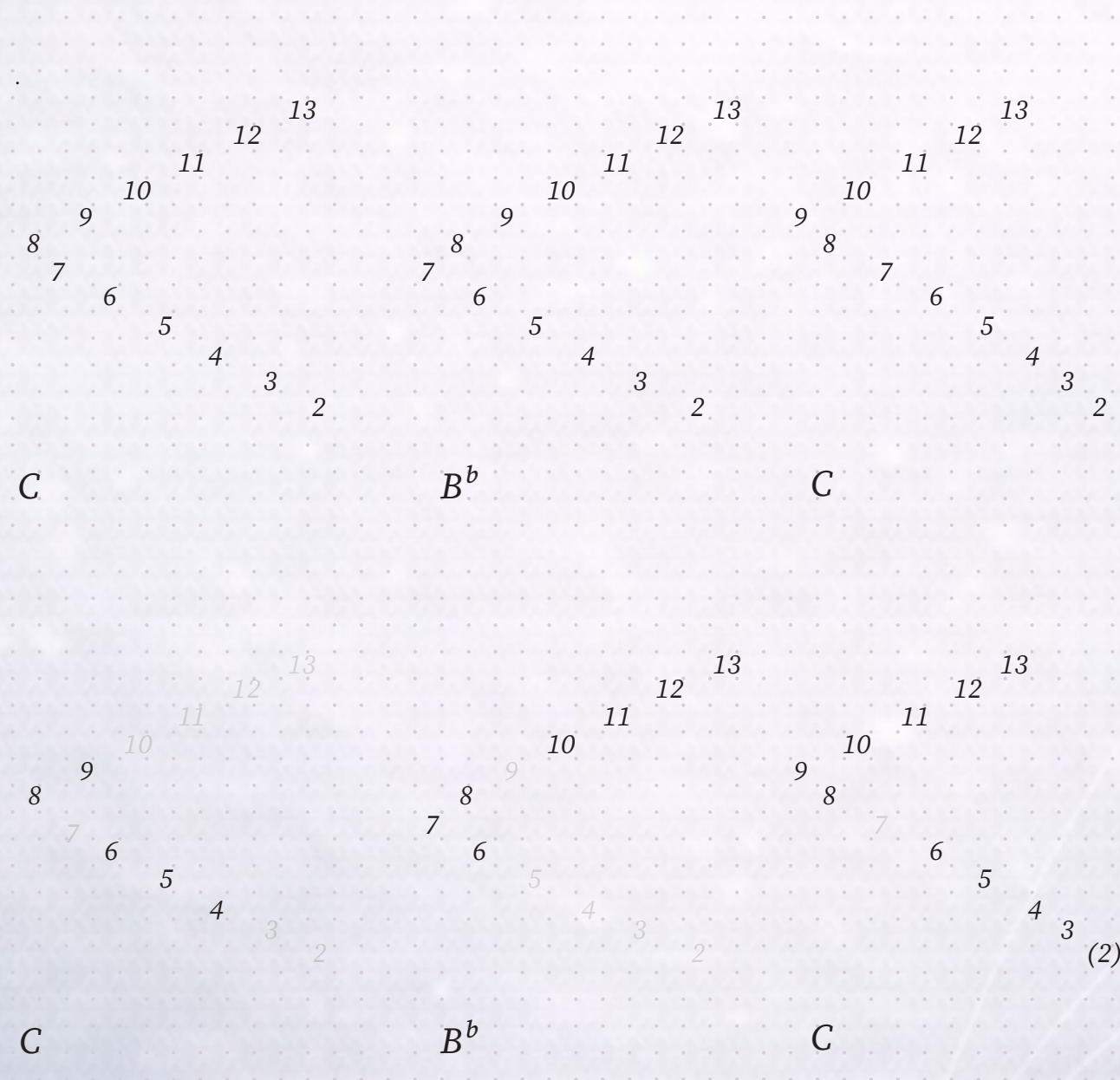


This allows me to delay the defining bass and also to smear between overtone harmonies with different fundamentals. The shape of these blooms is also like the way light is dispersed through a prism. The opening of “December” alternates between overtone chords built on C, Bb and Ab. Each time they occur, the harmony blossoms in a different way, often incurred by shifting the starting overtone and the direction in which they fan out: above-below etc. or below-above (as shown by the little arrows).

Starting Overtone (and direction)	9			
	8			
		7		etc.
				6
Fundamental	C	Bb	C	Bb

While this might seem quite strict, the reality is that a kind of poetic intent influences how I place and overlap these shifting overtone harmonies, each with its own internal emergent shape. The strict forms are filtered intuitively to allow enough aural space for the blurring between different harmonic areas. The resulting effect is an almost unplaceable type of sound. Some have asked me if there's any electronic effect here, but it is entirely acoustic. I think of it being akin to way the bright low winter light hits you right in your field of vision and then shifts just before it declines for good.

The following two figures show the strict shapes, and then the intuitively filtered ones as they appear at the opening of "December" (in the filtered version, you'll see a very faint image of where the original harmonic would strictly be placed):



Here's how some of it looks in the very opening page of the score:

for Alarm Will Sound

i. December

Donnacha Dennehy

The image shows a page of a musical score, likely for a symphony orchestra. The score is written for multiple instruments, including woodwinds, brass, percussion, and strings. The tempo is marked as "♩ = ca. 102".

The instruments listed on the left are:

- Flute
- Oboe
- Clarinet 1 in Bb
- Clarinet 2 in Bb (Bass Clarinet)
- Bassoon/Contrabassoon
- Horn in F
- Trumpet in Bb
- Trombone
- I: Marimba
- Percussion 1
- II: Vibraphone
- Percussion 2
- Piano
- Violin I
- Violin II
- Viola
- Violoncello
- Contrabass

The score includes various musical notations, such as notes, rests, and dynamic markings (ppp, mp, p). There are also performance instructions like "non vib.", "cup mute", "bucket mute", "Don't adjust overtune tuning - allow harmonics to be at their 'pure' tuning con sord.", and "Bring out top note more".

Temperament in Dialogue

At the start, the overtone chords alternate (and overlap) between C and Bb, until one on Ab is introduced (with the first occurrence of a kind of internal pulse). Eventually an Ab higher up (a direct octave multiple of the fundamental) is then re-interpreted as (an equal-tempered) G# in an E chord to introduce the first equal-tempered melodic object in the piece against an E overtone background. This happens a lot in *Land of Winter*, where a sustaining or rhythmically repeating overtone pattern underpins a melodic object related to it but entirely in equal temperament. Chris Thompson, one of Alarm Will Sound's percussionists, has produced a beautiful little video capturing some of this in "December," available [here](#).

The dialogue between equal-temperament and the overtone-derived world is very important in *Land of Winter*. I also have high tolerance zones — often the fifth harmonic is just treated like an equal tempered major third (not 14 cents flat as it would be in just intonation or not notated that way at least). I admire many composers who if they do something in just intonation, then everything must be explainable by that rubric. I also admire many composers who never veer from equal temperament. Somehow, I often need both for what I experience and want to sense in my music. A stopped clock is perfect twice a day whereas my watch is never correct but gives me a good sense of where I am in the day. More importantly it's the sensation that drives me, an attempt at an essence that feels both integral and mysterious. In certain movements, once I have the world built, I move almost entirely freely within it. I think of "March" and "July" for instance.

June: Expansion

The other musical solstice, for the longest day near the end of June, is reached via an expanding equal-tempered melodic process which then transforms into the notes of an overtone series. The original pitches emanate from an old Irish sean nós song that has long fascinated me — *Táim sínte ar do thuama* ("I am stretched on your grave"). I suppose they could have come from anything, but for me the provenance has a resonance — the idea of *stretching*, specifically stretching light — and I was especially taken with the way the bittersweet major 2nd tucks down from the largely ascending, optimistic motion at important junctures.

The image displays two staves of musical notation for an Irish sean nós song. The first staff is in 6/8 time, featuring a treble clef and a key signature of one flat (Bb). It includes a common time signature 'C' at the beginning and a '2' above a bracketed pair of notes. The second staff is in 3/4 time, also with a treble clef and one flat key signature. Both staves have lyrics written below the notes. Red dots are placed above certain notes in both staves, likely indicating specific intervals or harmonics discussed in the text. The lyrics are in Irish and English, with some parts in English being blank lines.

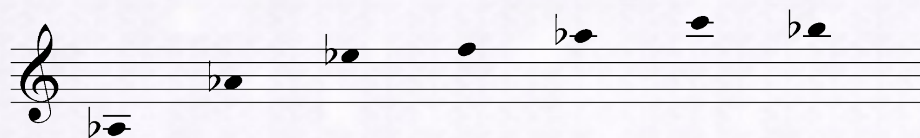
Tá-im sín- te ar do thua-ma, Is do gheóir ann do shíor mé; Dá mbeadh barr_ do

dhá_ lámh a-gam Ní sgar-fainn leat a choí - che._____

I then intuitively decided on three further expansions of this initial shape which are as follows (each one expanding in range from what went before):



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2nd expansion:



3rd (and final expansion):



The first expansion emphasizes the sub-dominant, while the second returns to a pitch shape emanating from Eb. There are no tucks (like between the third and fourth, and sixth and seventh notes in the original) by the time of the second expansion — each subsequent pitch in the series is higher than the one that came before. It follows a shape consistent with a filtering of the overtone series. The final tuck at the end of the melody does return however for the last melodic expansion and is an influence on the alternating 12th and 11th harmonics in the purely overtone chords that follow and also on the oscillation between the fundamentals Eb and Db (just like the

oscillation between C and Bb in the winter solstice).

A kind of note-replacing process is used to granularly connect each stage in the stretching melodic transformation, from the original melodic seed through the various expansions that follow. This happens at many different speeds, which come in and out of focus largely by instinct: quarter-note, half-note, sixteenth-note, 5/16 and dotted eighth notes. From each pitch object (the original and each of its expansions), I come up with a figure and a ground. A kind of note-replacing process is used to granularly connect each

stage in the stretching melodic transformation, from the original melodic seed through the various expansions that follow. This happens at many different speeds, which come in and out of focus largely by instinct: quarter-note, half-note, sixteenth-note, 5/16 and dotted eighth notes. From each pitch object (the original and each of its expansions), I come up with a figure and a ground. The ground is quite like the original shape of the series, whereas the figure is a pretty strict counterpoint of it. The sixteenth-note material combines pitches from both the figure and ground, according to patterns of alternating selections between them.

Here at the start of “June,” one can see the various speeds of the overlapping melodic transformation unraveling simultaneously:

vii. June

125

705 ♩ = ca. 104

Fl. Flute Smooth *p*

Ob. Smooth *p*

Cl. 1 Smooth *mp*

Cl. 2 Clarinet in B \flat *p*

Cbsn.

Hn. Smooth *mp*

Tpt. in B \flat cup mute *fp* (*p*)

Tbn. bucket mute *mp*

I: Mar. *mp*

I: Perc.

II: Vib. (Vibraphone) *mp* *mf*

II: Perc.

Pno. lightly *mp*

♩ = ca. 104

Vn. I non vib., smooth and silky *mp*

Vn. II non vib., smooth and silky *mp*

Va. smooth and silky *p* *mp*

Vc.

Cb.

6/8 crossrhythm (with winds and perc.)

Warmth, Density, and Increasing Brilliance

Overtone-blooms start to appear beneath the equal-tempered material from very early on in “June.” These blooms concentrate significantly on the lower harmonics, and they appear in pairs, with fundamentals a tone apart (just like the initial oscillating overtone distributions of the winter solstice), until we approach the summit of the melodic expansion. While the second of the pair consists entirely of lower harmonics (occasionally up to the 7th, but more often stopping at the 6th), the first usually adds the 13th harmonic over an otherwise quasi 5-limit harmonic world. It’s a sound that speaks to me. I like the piquancy of the combination with the warm, lower harmonics.

Example showing the early overtone blooms in June underpinning the unraveling melodic material:

The image displays a musical score for the piece "June," featuring various instruments and their parts. The score is divided into two systems. The first system includes parts for Flute (Fl.), Oboe (Ob.), Clarinet 1 (Cl. 1), Clarinet 2 (Cl. 2), Contrabass (Cbn.), Horn (Hn.), Trumpet in Bb (Tpt. in Bb), Trombone (Tbn.), Maracas (Mar.), Percussion (Perc.), Vibraphone (Vib.), and Piano (Pno.). The second system includes parts for Violin I (Vn. I), Violin II (Vn. II), Viola (Va.), Violoncello (Vc.), and Double Bass (Cb.).

Key annotations in the score include:

- A red circle around the 13th harmonic in the Flute part, labeled "13".
- A red circle around the 7th harmonic in the Trumpet in Bb part, labeled "7".
- Red handwritten notes "Bb" and "Ab" with brackets indicating specific intervals or notes in the Violin I and Violoncello parts.
- Red handwritten notes "W1" appearing above the Violin I and Violoncello parts.

The score includes dynamic markings such as *ppp*, *mf*, *f*, and *pp*, and articulation markings like *Smooth*, *pizz.*, and *arco*.

Indubitably, there is a poetic inspiration for my concentrating initially on the warmer hues of the largely lower harmonics blooming against related equal-tempered melodic material unveiling at different speeds simultaneously in “June.” The austere rhythmic unisons of “February” for instance stand in stark contrast to June’s multilayered warmth.

Once, however, the final melodic expansion is reached, the texture of the music transforms into pulsed chords (made of the stacked pitch expansions) against more persistently evolving and more extensive overtone blooms, stretching now to even higher partials than found in the original winter solstice, to emphasise the brilliant expanse of light versus dark. Only the 16th-note transformations of the melodies occasionally make their presence felt in an otherwise more monolithic context, before everything coalesces in purely alternating dense overtone blooms based on Eb and Db respectively. The density of these overtone blooms has been reached slowly over the entire month; it feels like a widening of light exposure emanating from a much warmer context than the winter solstice, where the higher harmonics feel starker and whiter in relation to the anchoring fundamentals.

Cyclical vs. Linear Time

Of course, the solstices make up only one component of the way the structure of the year makes its presence felt in this piece. The equinoxes are also transformed into overtone blooms at the end of “March” and “September.” And in the case of “September,” a kind of monumental pulsing of these blooms defines its soundworld before they solidify into ebbing dispersals of light (or light-sound if you like). As I was setting out to compose this piece, I acquired a copy of Oxford’s (rather exhaustive) *Companion to the Year* and even debated a more fastidious mapping of every day, especially as it pertained to the old Gaelic calendar, but I quickly realized that would be too constraining for me. For as much as *Land of Winter* is a kind of celebration of recurring time and its delineation and apprehension through light, it is also something written, psychologically, in the fear of the power of linear time — the progress towards death. The cyclical and the linear are forever interacting with each other through the piece. To

that end, references to an advent chorale by Bach, entitled *Wie soll ich dich empfangen* (“How shall I receive thee?”) underpins a kind of evolution in the piece, culminating in its reframing in a newly constituted chronology in November. This chorale is used by Bach in the *Christmas Oratorio* as a celebration of advent, and is also used with different words for Easter, but I also sense a darker or at least more existential hue to it: *how shall I meet my maker*. From the chorale I essentially extract its descent: falling by steps (and largely tones at that) in its first phrase and also descending (leaving out the soprano part and adding a few voice exchanges, which I do) in its third. Much that happens in the piece points then to this extracted chorale shape. Even the oscillating fundamentals, a tone apart, in the solstice overtones that I have concentrated on here refer obliquely to the defining fall of a tone. But that, I suppose, is a story for a different day — or year.

Donnacha Dennehy, December 31, 2025

*“it is also something written, psychologically,
in the fear of the power of linear time”*