Concept Analysis 1

Case study: Mihai Popean, *Tempestas, The Eye of the Storm* (2007) (14:00) for chamber ensemble

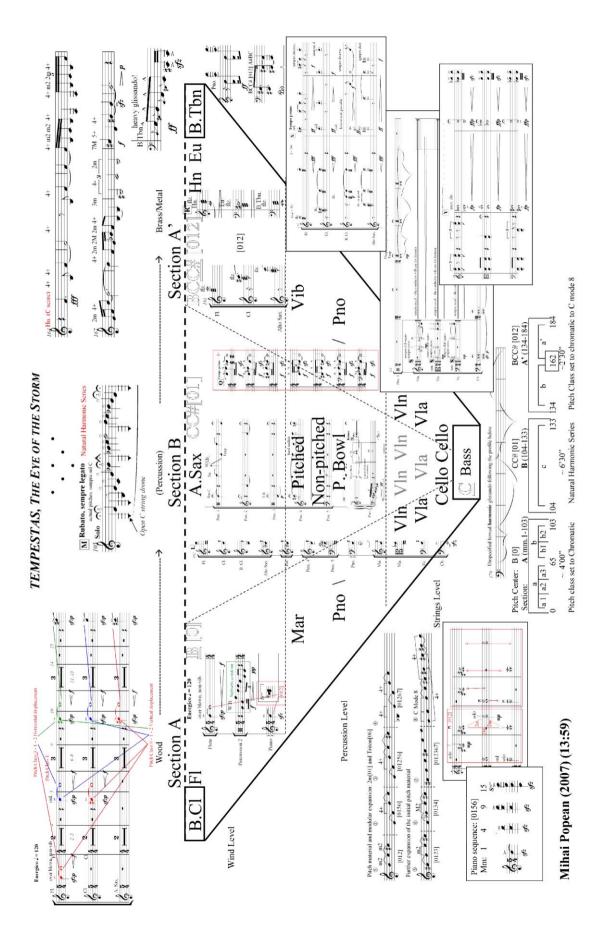
Context

Tempestas, The Eye of the Storm (2007) (15:00) for chamber ensemble had its premiere on November 13, 2007 by the BGSU Chamber Ensemble conducted by Octavio Mas-Arocas at the Bowling Green State University (Bryan Hall) in Ohio, USA.

A program work written for large chamber ensemble (Fl., Cl., B. Cl., A. Sax., F Hn., Euph., B. Tbn., 5 Perc., Pno., 2Vln., 2Vla., 2Cello, Cb.), the program notes state that it is "an ode to nature, based on two dramatically opposed musical gestures. The architectural design follows closely the blueprint of a cyclone. Particular attention was given to timbral exploration as each instrument has a precise role in the development of pitch material and overall soundscape."

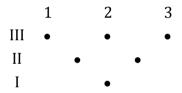
The title is based on the Latin word *Tempestas* associated with the goddess of storms or sudden weather, having several other meanings associated with powerful events such as violent storm, tempest, attack or fury. As the title suggests, there is a particular element of the storm which is the focus of the work, namely *the eye* of the storm. In this context it represents the point of equilibrium, a very significant feature of the architectural design employed for this composition.

The graphical analysis chart that follows displays the shape of the whole work as being inspired by that of a cyclone, with all the structural elements being organized around the principle of unity in diversity where numbers 1, 2 and 3 are the most important conceptual building blocks.



In this paradigm, 1 represents singularity and oneness, 2 represents duality or contraries while 3 represents the unity of contraries when in perfect equilibrium, meaning the union of oneness and duality, in other words an advanced trinity motif. For this particular work, the trinity motif is derived from the Greek *tetractys* reduced to three rows in order to suit the chosen model for formal and architectural development. Therefore, the core principle of this composition is based on the Pythagorean concept of quantity vs. quality in numbers.

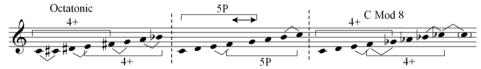
According to this model, numbers can be represented qualitatively such as a string of sequentially-ordered units 1, 2, 3 meaning \bullet , \bullet , \bullet ; as well as quantitatively such as a sequence of quantities I, II, III meaning \bullet , $\bullet \bullet$, $\bullet \bullet \bullet$. The two systems combined create the following bullet diagram:



The result is three horizontal levels, a symmetry axis, and the constant rendering of the first three prime numbers in both, quality and quantity. A string of numbers express mathematical results in different ways based on the application of the "quality vs. quantity" concept. As a result, numbers 1, 2, 3 are the backbone of the entire architecture.

Their secondary by-products 4, 5, 6 are also important from a conceptual standpoint, however less in terms of structure since in this idiom they cannot exist without the first three prime numbers. A web of interrelated associations of these elements translates into the overall soundscape.

Number	Concept	Form	Sonic material	Pitch	
1	Unity,	One movement,	one bass	one pitch center	
	uniqueness,	one pinpoint	instrument/family	(C)	
	equilibrium,	instrument			
	symmetry	(Contrabass)			
2	Contraries,	inner/outer	wood vs. metal	two deviations of	
	polarity,	sections,	instruments, winds	the pitch (2m up	
	tension	expanding form,	vs. strings	& down from the	
		symmetrical		pitch center), two	
		distribution of		main intervals	
		formal structure		(2m & 4+)	
3	Trinity,	3 formal sections,	three classes of	three intervals	
	contraries +	3	instruments	based on	
	equilibrium	pitches/intervals,	(Winds,	inversions of the	
	point	3 levels of	Percussion, Strings;	same 2m (2m, 7M	
		architecture,	Piano is treated	and 9m)	
		triangle shape	like a percussion		
4, 5, 6	While these	na by products of t	instrument)	annaidanad hana aa	
4, 3, 0	While these are by-products of the grid, they are not considered here as important structural elements. However, they are represented as by-				
	 4: (1 movement / 3 section, symmetrical interval displacement (BCFE or A#BCC#), major tetrachord displaced for the C mod 8 horn solo in the end. The C mod 8 is comprised of two major tetrachords ½ step away from each other and containing the same interval classes as the octatonic scale. 5: pentachord subsets (CBFEC#) (CBFED#), 5 different pitches on string instrument; 				
		to bring the pitch	material (the two		
	pentachords) together at the end into a hexachord [012567], not				
	exploited in the harmonic context up to that point. However, I				
	chose instead to use the same intervallic relationships in order to				
			new material based on the existent material and the		
	struc	ture of the octatonic	scale.		



Structure

Tempestas has the shape of a Cyclone (triangular shape in bold lines on the graphical analysis chart). The architectural design is obtained by over-imposing the Pythagorean diagram on the cyclone shape. As a result, the different layers and levels of the shape have structural and

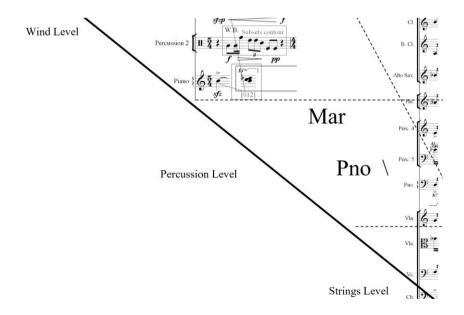
musical meaning. For instance, the top three bullets can be discussed in terms of:

- Three bullet levels •
- Symmetry axis
- Three corners of the chart
- Quantitative rendering of the three pitches
- The diagonal middle bullets
- Three colors on each family of instruments
- Three bass instruments
- The Contrabass

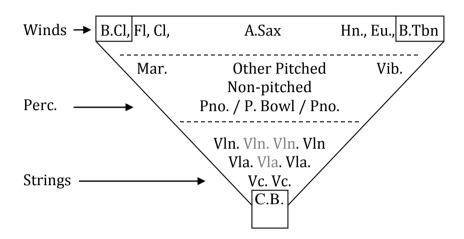
The top three bullets in the diagram are represented by the three sections marked in bold at the top of the analysis chart: Section A, Section B and Section A'.



The three bullet levels in the diagram are represented by the three levels of instrument families: Winds, Percussion and Strings.



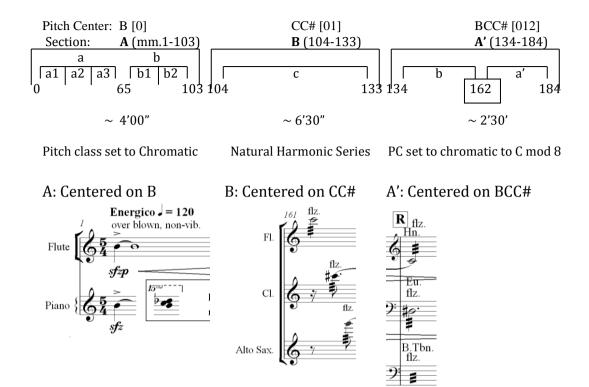
The symmetry axis found in the diagram is represented in the chart by the axial displacement of key structural elements such the String Bass, Prayer Bowl, Non-pitched instruments and Alto Saxophone, the contrasting material in the work, and so on.



The three corners of the chart represent three pitches (BCC#), the fundamental bricks of the architectural design in terms of pitch content. The work starts with B on the left side of the chart, is pinned on C in the middle section (also the lowest pitch in the whole score) and ends with C# in the Bass Trombone on the right side of the chart. The quantitative rendering of the same pitches means one pitch emphasis for the first section (B), two for the second (CC#) and three for the third (BCC#).



In the same manner, the woodwinds render the most important material at the beginning; strings and percussion in the middle; and all of them with emphasis on the brass instruments in the last section. The diagonal middle bullets make the sum of the first and third sections equal to the middle section. The first and the last sections added together also equal the middle section in terms of time span.



The transitions between sections are clearly marked with chromatic clusters. There are three colors on each family of instruments:

- Flute, Clarinet and Saxophone
- Horn in F, Euphonium and Trombone
- Violin, Viola and cello

There are three bass instruments, one for each family of instruments, each situated in one of the three corners of the chart. The percussion instruments are very important in the middle section where they lay the whole structure. The Contrabass is the pinpoint of the whole architecture and has a special role to play.

From a formal standpoint, *Tempestas* is a *One* movement work with *Two* contrasting musical materials organized in *Three* sections:

Section A, Section B and section A', a dualistic expression of a singular event: the event is the storm and the two gestures are:

- The first section (A), based on two related sets of pitch classes [01256] & [01267], rendered later again in a mirror fashion as a modified closing material (A');
- The middle material (B), based on the progression of natural harmonic series.

Section A is a miniature rendering of the whole macrostructure in a fractal manner; section B is comprised of contrasting material and section A' is a modified return of section A.

There are two types of contrasting musical material rendered in sections A and B. First, at the bottom of the chart we have the return of the b material followed by a' in the A' section. Section A has the same architecture as the whole work: *One* section, *Two* contrasting subsections a and b, and *Three* divisions. The subsection a is divided further into a1, a2 and a3 while b is also divided further into b1 and b2. Observe again the blue print: *One* section, *Two* subsections, *Three* levels of formal development. At an even more intimate structural level we observe again *One* of each subsections a and b, *Two* b divisions and *Three* a divisions.

This section is comprised of 103 measures, lasts 4:00 and the metronome marking is quarter = 120. Section B is based upon new, contrasting material contained in the subsection c. This material is rendered in such a way that it gives the impression of a section with no divisions, acting as an architectural axis. This section is comprised of 30 measures, lasts for 6:30 and the metronome marking is quarter = 50 for most of it.

Section A' is the return of section A rendered in a mirror in order to preserve symmetry around the axis. Subsection b is rendered first, followed by a modified subsection a. In order to preserve the sense of direction, this is the shortest section. It is comprised of 30 measures, lasts 2:30 and the metronome marking is quarter = 120 (tempo primo). A + A' = B as far as time is concerned.

Section A reveals the structure of the piece using the overall architecture in a miniature: *One* section A, *Two* subsections a/b and *Three* renditions of the 1st subsection (a 1-2-3)

- a1 = mm. 1-24
- a2 = mm. 25-48
- $a3 = mm \ 49-74$

In terms of architectural design, the middle section should be approximately equal in time with the other two combined. The climax occurs at measure 162 with a preliminary mini climax at measure 102. Proportions are 103 (4:35) – 29 (6:30) – 50 (2:55) [14:00]

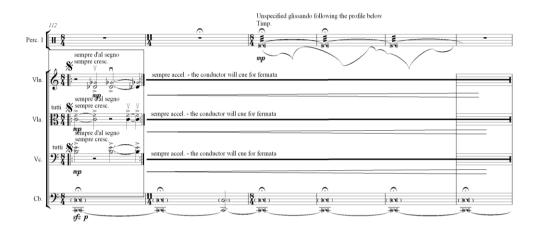
This formal structure represents the blueprint of a continuously expanding form since the first musical idea comes back in a mirror at the end, much like wrapped around the second and central idea, while the whole material is pinpointed and developed on pitch class 0 (C). In order to suggest this formal unity, the contrabass plays a unique role within the design by providing the central pitch class in the lowest register and by being the pivot for the whole structure.

As seen in its part, it is not working with the other instruments in the strings section, but rather together with the other two bass instruments in the wind sections (wood and brass). Furthermore, it represents the pinpoint of the storm and it is the only string instrument that has the following gesture in its part, suggesting the random wavering of the silent wind inside the eye of the storm:

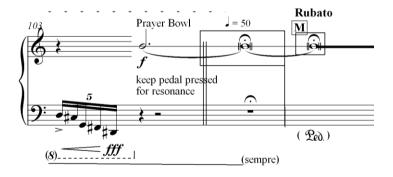
Chass 119-123 and 179-185



In order to maintain the idea of dualism, in the middle section, that same pattern is given to the timpano and given back to the contrabass at the end, suggesting again a similar structural arrangement: *One* gesture (wind-like motion), *Two* instruments (contrabass, timpano), *Three* times (each section).



A similar function is given to the piano which changes to Prayer Bowl in the middle section and then back to piano for the last section.



Character

The character of *Tempestas* follows the same architectural design with *One* general mood characterized by tension, *Two* opposed expressions (accumulation/dispersion and contemplative) and *Three* different

characters: caught in the impermanent states of tension (A), spiritual (B) and ironic (A', end – trombone).

These elements are further enhanced by three different tempos: quarter = 120, 50, 94 and back to tempo primo which being a repetition is discounted.

Sonic / timbral material

Particular attention was paid to timbral exploration as each instrument has a precise role in the development of the overall soundscape. There are three different colors in each family:

- Woodwinds: Flute, Clarinet (Bb + Bass) and Saxophone (Alto);
- Brass: Horn, Euphonium and Bass Trombone;
- Percussion: Pitched, Non-pitched and Piano which is treated as a percussion instrument;
- Strings: Violin, Viola and Cello;
- The Contrabass has a special function (structure pinpoint, fulcrum) and it is not written as part of the strings section as it belongs to the group of bass instruments and has a voice of its own;
- There are three bass instruments in two groups (wind [wood & brass] and strings) with one structural pinpoint.

Pitch content

As far as the pitch content is concerned, the work is built such that it follows the same *tetractyc* principles outlined in all other levels of architectural and structural design.

Section A

The pitch material in section is centered on C (pitch class 0) and is characterized by modular development based on two interval classes:

• 2m BC [01]

• triton CF# [06]

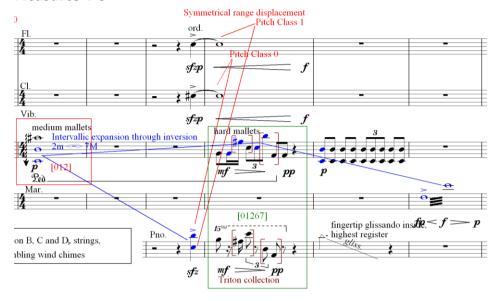
As far as the [012] set is concerned, we find it in several distinct incarnations as:

- horizontal rendering: Flute;
- vertical displacement: Flute, Clarinet, Alto Sax;
- cluster: piano part, opening figure;
- shifting: strings example in the left side bottom square.

Measures 2-3

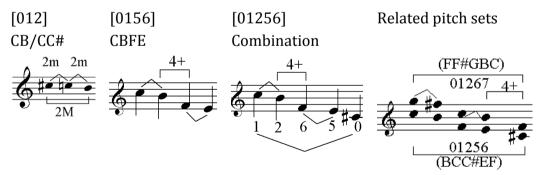


Measures 4-5



See also measure 15 for the union of the two collections (7M + tri + 7M) in Pno. Sets such as [0156] - [01256] - [01267] represent further expansions and an element of novelty at the end.

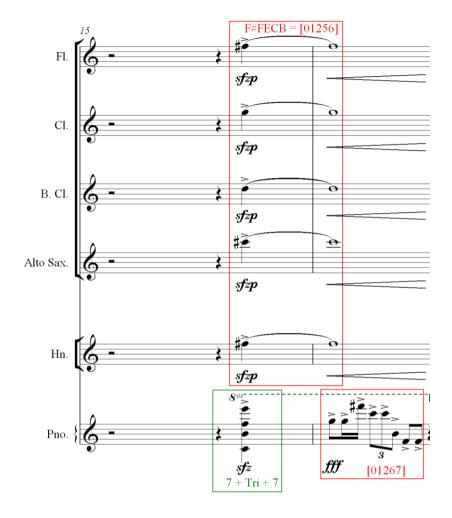
Symmetrical Interval Class chains:



Inversions: 2m <=> 7M <=> 9m and 4+<=>4+

Macrostructure: [012]

Measure 15

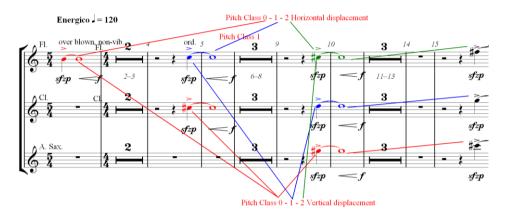


The analysis chart showcases the three structurally important pitches BCC# also known as prime form [012], and the different ways to manipulate the intervallic content in order to expand the initial material. The same architectural style is employed once more for intervallic development: One pitch center (C), two [01] displacements (BC & CC#), Three pitches (BCC#)

The three pitches create two minor seconds. Inserting different intervals before, between, and after the two minor seconds results in chains of related pitch collections. The example the left hand corner of

the chart shows different types of displacement used in order to render the pitch collection [012].

- horizontal rendering: Flute
- vertical displacement: Flute, Clarinet, Alto Sax
- cluster: piano part, opening figure
- shifting: strings example in the left side bottom square



An example of vertical architecture based on the [0156] pitch collection can be seen in the piano part as rendered on the bottom left square box of the graphical analysis chart.

The combination of the two collections [012] and [0156] results in a pentachord [01256], a byproduct extensively used throughout the piece. Along with this pentachord, a second one [01267] is created by adding an extra triton to [0156]. Further expansions of the initial material are exemplified below. They are realized by modifying the interval inserted between the semitones or by combining existing by-products.

Section B

In contrast to section A that is based on material created by manipulating intervallic displacement, section B is built upon the natural harmonic series.

After a false climactic moment that brings together a chromatic 12-tone cluster, the Prayer Bowl tuned in C# sets the beginning of

middle section. The cello solo is based upon natural harmonic series while maintaining a C open string drone. This brings the second level of vertical type of displacement [01] by droning together C and C#.

The metronome marking drops from Quarter=120 to 50 preparing for a contemplative mood, in powerful contrast with the wrathful end of the first section. It brings verticality and spiritual dimension inside the tormenting storm. Several elements come together to set in stone the traits of this section:

- The Prayer Bowl;
- The Harmonic series;
- The very high register for cello;
- The trombone signals towards the end of this section resembling the Tibetan ritual Horns.

Section A'

As a varied recurrence of section A, section A' brings together three different types of material:

- Synthetic material from section A:
- Resemblance of the B section material;
- Novelty element in Horn signal during the closing horn solo. It
 is really a scale of 8 pitches with intervallic content similar to
 the octatonic scale but acting as two major tetrachords half
 step away from each other.

Novelty element in Horn signal (C score):





Recapitulating, the pitch material is centered on PC 0 (C) and is developed on a continuously expanding pattern based on two symmetrical interval classes:

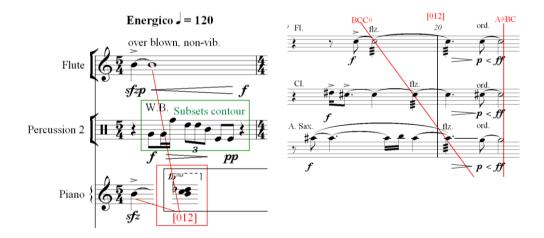
- an axial [01] CB and the by-product [02] (B-C-C#)
- a linear [06] CF#

The same architectural style is employed once more for intervallic development:

- One pitch center (C), two [01] displacements (CB & CC#), Three pitches (BCC#)
- In terms of microstructure, the presentation of [012] occurs at multiple levels:

Measure 1

Measure 19

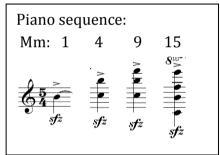


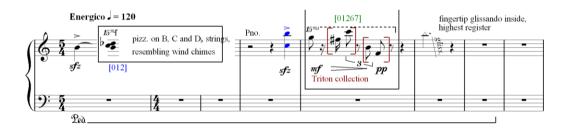
Measure 45

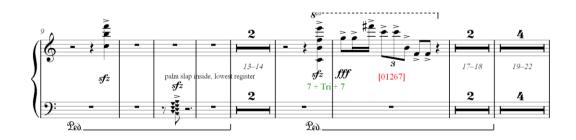


The vertical displacement type of progression is clearly emphasized with accent and sfz:

2m – triton – 2m in inversion (7M – tri- 7M), all inside a1







The bridge and development figures are passed on to the woodwinds on measure 42; then strings on measure 67 are preparing the 1st climactic moment (false climax). Woodwind in measure 52 takes on the opening strings [012] figure.



The Eye of the Storm (fulcrum)

After a false climax at measure 103, the Prayer Bowl tuned in C# sets the beginning of the middle section. The cello is given a pattern of natural harmonics based on the harmonic series while maintaining a C open string drone. This continues the model of the [012] vertical type of displacement $\{[0] - [011] - [012]\}$.



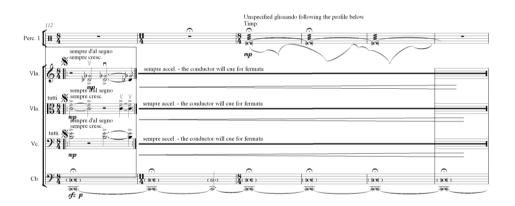
The metronome marking drops from Quarter=120 to 50 preparing for a contemplative but outwardly mood, in powerful contrast with the end of the first section. Simplicity and natural quietness is the key for this oasis of silent spirituality inside the tormenting storm. Several elements come together to set in stone the traits of this section:

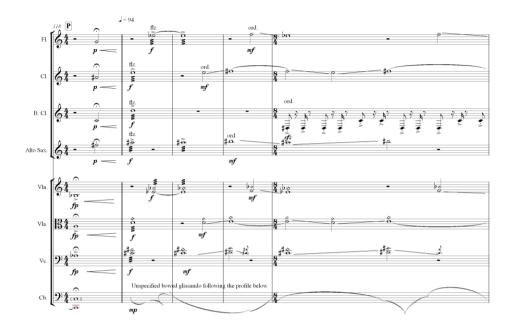
- The Prayer Bowl
- The Harmonic series
- The very high register for cello

• The trombone signals towards the end of this section resembling the Tibetan ritual Horns calling for ceremonial celebration









Tempestas has an ironic/ludic character as well, the last gesture in the trombone resembling laughter. The same collection of pitches that opened the work are now realizing the closing gesture, this time featuring heavy glissandos while ending in maximum power:



A comprehensive analysis would require an extensive measure by measure analysis to add more supportive4 evidence for the observations made thus far, augmented with the discussion of other compositional layers as well. For the time being, the purpose of this preliminary analysis was to showcase how a concept, no matter how simple, can manifest at different compositional levels while at the same time transcending all these levels of musical elaboration into meaning beyond the music itself.