### MTO 17.2 Examples: Jan, Music, Memory, and Memes

(Note: audio, video, and other interactive examples are only available online)

http://www.mtosmt.org/issues/mto.11.17.2/mto.11.17.2.jan.php

**Table 1. Overview of Museme Categories**

<table>
<thead>
<tr>
<th>Category of Museme</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Melodic</td>
<td>Replicated localized, psychologically closed ( \langle 7 \pm 2 \rangle )-element pitch sequences (Snyder 2000, Chapter 3) ( \langle 7 \pm 2 \rangle )-element chord sequence, either simultaneous attack-point chords or animated (but perceptually secondary) accompaniment figures.</td>
<td>( \langle 5 \pm 9 \rangle )-note interval/scale degree sequence, such as the ( \hat{1} \hat{2} \hat{4} \hat{5} \hat{3} ) pattern of Example 1.</td>
</tr>
<tr>
<td>2. Harmonic</td>
<td>Replicated localized, psychologically closed ( \langle 7 \pm 2 \rangle )-element chord progressions, either simultaneous attack-point chords or animated (but perceptually secondary) accompaniment figures.</td>
<td>( \langle 5 \pm 9 \rangle )-element chord sequence, such as in the ( \text{I}^{\text{IV}} = \text{ii}^{\text{V}} = \text{V}^{\text{VI}} = \text{vi} ) pattern of Example 1.</td>
</tr>
<tr>
<td>3. Rhythmic</td>
<td>Replicated localized, psychologically closed ( \langle 7 \pm 2 \rangle )-element duration/accentuation/inter-onset interval sequences.</td>
<td>( \langle 5 \pm 9 \rangle )-element rhythmic sequence, such as the ( \text{e.g., } \frac{3}{4} ) pattern of Example 1.</td>
</tr>
<tr>
<td>4. Formal/structural (Memesätze)</td>
<td>Repeatedly reinstated formal/structural archetypes and schemata, themselves consisting of harmonic/melodic patterning at deeper structural-hierarchical levels (Jan 2010).</td>
<td>Sonata form(s).</td>
</tr>
<tr>
<td>5. Textural/timbral/dynamic</td>
<td>Replicated combinations of instruments, registers and timbres.</td>
<td>Early/mid-classical “motto” opening (forte rhythmic/arpeggio motive followed by piano lyrical/conjunct melody, as in the first theme (bb. 1–8) of J.C. Bach’s Keyboard Concerto in B(_{b}), major op. 13 no. 4 (1777)):</td>
</tr>
<tr>
<td>7. Performative</td>
<td>Replicated motor patterning in the service of improvisation or performance.</td>
<td>Evolution and transmission of distinct performance traditions.</td>
</tr>
</tbody>
</table>
Figure 1. Recipemes, Selectemes, and Explanemes

- **Recipeme**
  - 'Competing ideas of how to do things'

- **Explaneme**
  - 'Competing ideas that are used in answering questions about why things work or work better'
  - Black Box: 'Anything that has inputs and outputs under some degree of control'

- **Selecteme**
  - 'Competing ideas of betterness'
Figure 2. Snyder’s Model of Memory for Music
Figure 3. Interdigitating Triangular Arrays Encoding Attributes of Objects and Concepts
Figure 4. Hexagonal Paving of Cerebral Cortex by Interdigitating Triangular Arrays
Figure 5. Attributes of Melodic Musemes Plotted Against Number of Component Elements

copying-infidelity
perceptual-cognitive salience
LT Memorability
ST non-Memorability
individuality (style structure) vs. generality (style shape) (Narmour 1990, 34)
information content (given by r-value) (Jan 2007, 61)
perception of quotation/borrowing/plagiarism
[Cope's listener recognition/referential-analytic continuum:
commonality framework likeness paraphrase quotation
stylistic non-integration (Cope 2003, 11)]
homology/non-analogy
Example 1. Mozart, Symphony no. 41 in C major K. 551 (“Jupiter”) (1788), IV, measures 1–8

*Molto Allegro*
Figure 6. Calvinian Implementation of Melodic Musemes in Example 1
Figure 7. Implementation of Snyder’s Model of Memory by the HCT
Example 2. Non-“Top-Knotism” in Haydn and Beethoven
i. Haydn: Symphony no. 88 in G major (c. 1787), I, measures 16–20
ii. Beethoven: Symphony no. 8 in F major op. 93 (1812), IV, measures 0–4

i.

ii. Allegro vivace
Example 3. Coindexation-Determined Segmentation

i. Haydn: String Quartet in C major op. 74 no. 1 (1793), IV, measures 0–4

ii. Haydn: String Quartet in B♭ major op. 76 no. 4 (1797) (“Sunrise”), III, Trio, measures 51–5

iii. Beethoven: Symphony no. 8 in F major op. 93 (1812), I, measures 72–8
Figure 8. Calvinian Implementation of Coindexation-Determined Segmentation
Figure 9. Museme Mutation via Pattern Overlap and Hybridization
Figure 10 i & ii. Museme Mutation via Escape from Error Correction

i) Variant arises near barrier  
ii) Variant establishes rival colony
Example 4. “Jupiter” Harmonic Museme
i. Three-Voice Layout of “Jupiter” Harmonic Museme
ii. Reduction of “Jupiter” Harmonic Museme

Figure 11. Calvinian Implementation of “Jupiter” Harmonic Museme in Example 4 ii
Example 5. “Cortical Reduction” of Harmonic Counterpoint

i. J.S. Bach: Fugue in G minor BWV 861 from Book I of Das wohltemperirte Clavier (1722), measures 24–6

ii. Tactus-Alignment “Cortical Reduction” of Example 5 i
Figure 12. Calvinian Implementation of Neo-Riemannian Triadic Perturbations
i. A “Realization of the Parsimonious Tonnetz” (Cohn 1997, 15, Figure 9a; reproduced with permission)
ii. Calvinian Implementation of Figure 12 i
Figure 13. Calvinian Implementation of Recursively-Embedded Structural-Hierarchic Abstraction
Table 2. Hypothetical Melodic-Musemic Implementation of Figure 13

<table>
<thead>
<tr>
<th>Level $n + 3$ (foreground-level allele-musemes) (Gjerdingen: F$_3$; see Section 5 for an explanation)</th>
<th>Level $n + 2$ (shallow-middleground-level cue-allele museme) (Gjerdingen: F$_2$)</th>
<th>Level $n$ (background-level CLR) (Gjerdingen: F$_1$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x A_1$: e$^1$-d$^1$-e$^1$-e$^1$</td>
<td>$x n_1$: e$^1$-g$^1$-e$^1$-e$^1$</td>
<td>$x A$: e$^1$</td>
</tr>
<tr>
<td>$x A_2$: d$^1$-c$^1$-d$^1$-g$^1$</td>
<td>$x n_2$: d$^1$-b-c$^1$-d$^1$</td>
<td>$x n$: d$^1$-c$^1$</td>
</tr>
<tr>
<td>$x A_3$: c$^1$-d$^1$-e$^1$-e$^1$</td>
<td>$x n_3$: f$^1$-g$^1$-e$^1$-e$^1$</td>
<td>$x$: e$^1$</td>
</tr>
<tr>
<td>$y A_1$: d$^1$-c$^1$-f$^1$-d$^1$</td>
<td>$y n_1$: b-ab-d$^1$-b</td>
<td>$y A$: d$^1$</td>
</tr>
<tr>
<td>$y A_2$: e$^1$-g$^1$-b-c$^1$</td>
<td>$y n_2$: e$^1$-d$^1$-b-c$^1$</td>
<td>$y n$: b-c$^1$-d$^1$</td>
</tr>
<tr>
<td>$y A_3$: b-a-g-b</td>
<td>$y n_3$: d$^1$-ab-1-f$^1$-d$^1$</td>
<td>$y$: d$^1$</td>
</tr>
<tr>
<td>$z A_1$: e$^1$-d$^1$-e$^1$-e$^1$</td>
<td>$z n_1$: e$^1$-f$^1$-e$^1$-e$^1$</td>
<td>$z A$: e$^1$</td>
</tr>
<tr>
<td>$z A_2$: d$^1$-c$^1$-d$^1$-g$^1$</td>
<td>$z n_2$: d$^1$-e$^1$-d$^1$-g$^1$</td>
<td>$z n$: d$^1$-e$^1$-d$^1$</td>
</tr>
<tr>
<td>$z A_3$: c$^1$-d$^1$-e$^1$-e$^1$</td>
<td>$z n_3$: g-e$^1$-e$^1$-e$^1$</td>
<td>$z$: e$^1$</td>
</tr>
</tbody>
</table>

Note: The symbols $e$, $d$, $c$, $b$, and $f$ represent different musical elements or concepts in the original table.

i. Haydn: Symphony no. 48 in C major (“Maria Theresa”) (1769), I, measures 40–42
ii. Mozart: Piano Sonata in D major K. 576 (1789), I, measures 24–6
iii. Beethoven: Piano Sonata in G major op. 14 no. 2 (?1799), I, measures 17–19
iv. Voice-Leading Schema of Examples 6 i–iii
Figure 14. Multileveled Memetic-Structural Abstraction by an ART-2 Network