# RECENT DEVELOPMENTS IN THE MUSIC ENCODING INITIATIVE PROJECT: ENHANCING DIGITAL MUSICOLOGY AND SCHOLARSHIP

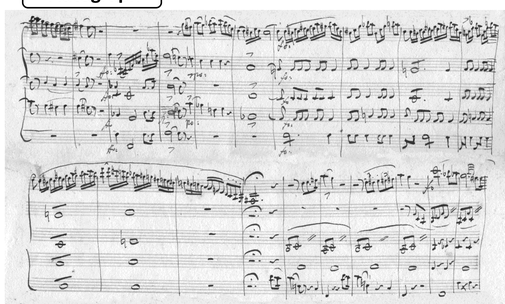

**Perry Roland**
**University of Virginia**
**pdr4h@virginia.edu**

**J. Stephen Downie**
**University of Illinois at Urbana-Champaign**
**jdownie@uiuc.edu**

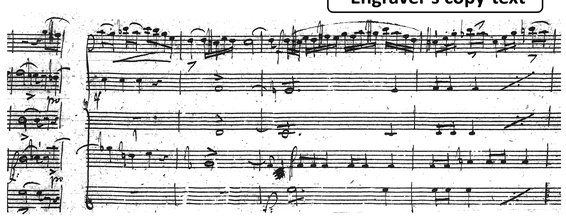

## DIGITAL CRITICAL EDITIONS

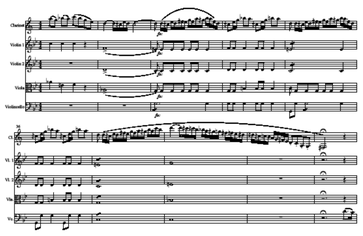
**Autograph**

Courtesy of Johannes Kepper

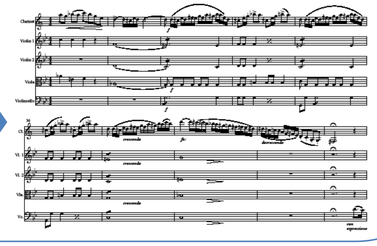


**Engraver's copy-text**





**MEI file**



## NEUME NOTATION

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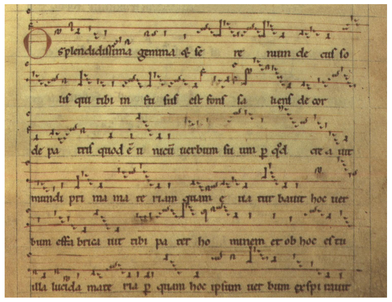
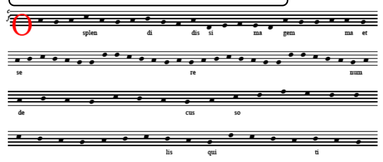


**Modern rendition from MEI**



**MEI code**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<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mei (View Source for full doctype...)>
- <mei xmlns:xlink="http://www.lib.virginia.edu/digital/resndev/mei/" version="1.8b">
  - <meihead>
      <meiid meiform="meiid">O splendidissima gemma</meiid>
    - <filedesc meiform="filedesc">
      - <titlestmt meiform="titlestmt">
          <title meiform="title">O splendidissima gemma</title>
        - <respstmt meiform="respstmt">
            <agent meiform="agent">Hildegard von Bingen</agent>
          </respstmt>
        </titlestmt>
      - <pubstmt meiform="pubstmt">
        - <respstmt meiform="respstmt">
            <agent id="sm" meiform="agent">Stefan Morent</agent>
            <agent id="gs" meiform="agent">Gregor Schröder</agent>
          </respstmt>
        - <availability meiform="availability">
            <userestrict meiform="userestrict">Tübingen © 2007 Stefan Morent; Gregor Schröder.
              All rights reserved.</userestrict>
          </availability>
        </pubstmt>
      </filedesc>
    - <editorialdecl meiform="editorialdecl">
        <p meiform="p">Interpretations of sequences of neumes, which might be interpretated
          differently by other encoders, are declared in *annot* elements.</p>
      </editorialdecl>
    - <profiledesc meiform="profiledesc">
      - <langusage meiform="langusage">
          <language id="lat" meiform="language">latin</language>
        </langusage>
      - <musicclass meiform="musicclass">
        - <keywords meiform="keywords">
            <term meiform="term">Marian antiphone</term>
            <term meiform="term">processional antiphone</term>
            <term meiform="term">German neumes</term>
          </keywords>
        </musicclass>
      </profiledesc>
    - <sourcedesc meiform="sourcedesc">
      - <source id="D" meiform="source">
        - <titlestmt meiform="titlestmt">
            <title meiform="title">Facsimile Codex D</title>
          - <respstmt meiform="respstmt">
              <agent form="persname" role="composer" meiform="agent">Hildegard von
                Bingen</agent>
            </respstmt>
          </titlestmt>
        - <pubstmt meiform="pubstmt">
            <pubstatus meiform="pubstatus">Unpublished manuscript</pubstatus>
          </pubstmt>
        - <physdesc meiform="physdesc">
            <extent meiform="extent">f. 154 line 7 - f. 154v line 1</extent>
            <physmedium meiform="physmedium">parchment, brown ink</physmedium>
            <dimensions units="cm" meiform="dimensions">20 x 29 cm</dimensions>
            <condition meiform="condition">good condition, some folios missing</condition>
          - <provenance meiform="provenance">
            - <bibref meiform="bibref">
                <corpname meiform="corpname">Abdij Dendermonde, Belgium, cod.
                  9</corpname>
              </bibref>
```

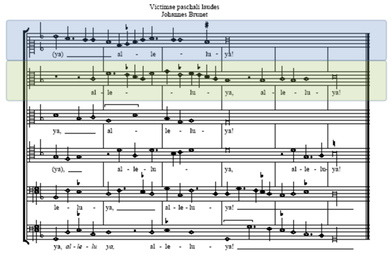

## MENSURAL NOTATION

**MEI code**


```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mei (View Source for full doctype...)>
- <mei version="1.8b" xmlns:xlink="http://www.lib.virginia.edu/digital/resndev/mei/">
  + <meihead>
  + <work>
    - <music meiform="music">
      - <mdiv meiform="mdiv">
        - <score meiform="score">
          + <scoredef key.sig="1f" key.pname="g" key.mode="minor"
              bar.place="mensur" meter.rend="invis" meiform="scoredef">
          - <section meiform="section">
            - <staff def="1" meiform="staff">
              - <note pname="b" oct="4" dur="minim" meiform="note">
                  <syl con="u" meiform="syl">(ya)</syl>
                </note>
                <note pname="a" dur="minim" dots="1" meiform="note" />
                <note pname="g" dur="semiminim" meiform="note" />
                <note pname="g" dur="minim" meiform="note" />
                <barline meiform="barline" />
                <note pname="f" oct="4" dur="minim" meiform="note" />
              - <note pname="d" dur="semiminim" meiform="note">
                  <syl con="d" meiform="syl"></syl>
                </note>
                <note pname="e" dur="semiminim" acci.ges="f" meiform="note" />
                <note pname="f" dur="semiminim" meiform="note" />
                <note pname="g" dur="semiminim" meiform="note" />
              - <note pname="a" dur="minim" dots="1" meiform="note">
                  <syl con="d" meiform="syl">le</syl>
                </note>
                <barline meiform="barline" />
                <note pname="a" oct="4" dur="semiminim" meiform="note" />
                <note pname="g" dur="semibreve" meiform="note" />
              - <note pname="f" dur="minim" acci.ges="s" meiform="note">
                  <syl con="d" meiform="syl">lu</syl>
                </note>
                <barline meiform="barline" />
              - <note pname="g" oct="4" dur="breve" meiform="note">
                  <syl meiform="syl">ya!</syl>
                </note>
                <barline meiform="barline" />
                <space dur="breve" meiform="space" />
                <barline meiform="barline" />
                <space dur="breve" meiform="space" />
                <barline meiform="barline" />
            </staff>
```



```
- <staff def="2" meiform="staff">
    <rest dur="semibreve" meiform="rest" />
    <rest dur="minim" meiform="rest" />
  - <note pname="c" oct="4" dur="minim" meiform="note">
      <syl con="u" meiform="syl">al</syl>
    </note>
    <barline meiform="barline" />
  - <note pname="f" oct="4" dur="minim" dots="1" meiform="note">
      <syl con="d" meiform="syl">le</syl>
    </note>
    <note pname="e" dur="semiminim" acci.ges="f" meiform="note" />
    <note pname="d" meiform="note" />
    <note pname="c" meiform="note" />
    <note pname="f" dur="minim" meiform="note" />
    <barline meiform="barline" />
    <note pname="g" oct="4" dur="minim" meiform="note" />
    <note pname="e" acci.ges="f" meiform="note" />
  - <note pname="f" dur="semiminim" meiform="note">
      <syl con="d" meiform="syl">lu</syl>
    </note>
    <note pname="e" acci.ges="f" meiform="note" />
    <note pname="d" meiform="note" />
    <note pname="c" meiform="note" />
    <barline meiform="barline" />
  - <note pname="b" oct="3" dur="semibreve" meiform="note">
      <syl meiform="syl">ya,</syl>
    </note>
    <rest dur="minim" meiform="rest" />
  - <note pname="b" dur="minim" meiform="note">
      <syl con="d" meiform="syl">al</syl>
    </note>
    <barline meiform="barline" />
  - <note pname="c" oct="4" dur="minim" meiform="note">
      <syl con="d" meiform="syl">le</syl>
    </note>
    <note pname="b" oct="3" meiform="note" />
  - <note pname="c" oct="4" dur="semibreve" meiform="note">
      <syl con="d" meiform="syl">lu</syl>
    </note>
    <barline meiform="barline" />
  - <note pname="d" oct="4" dur="breve" meiform="note">
      <syl meiform="syl">ya!</syl>
    </note>
    <barline meiform="barline" />
</staff>
```


## Data Collection from MusicXML/Visualization via Mup

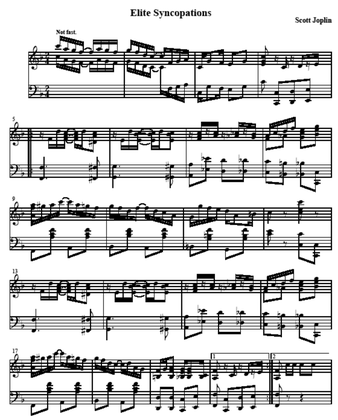
**MusicXML code**


```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE score-partwise (View Source for full doctype...)>
- <score-partwise version="1.1">
    <movement-title>Elite Syncopations</movement-title>
  - <identification>
      <creator type="composer">Scott Joplin</creator>
    - <encoding>
        <software>Finale 2005 for Windows</software>
        <software>Dolet 3.0.2 for Finale</software>
        <encoding-date>2005-11-16</encoding-date>
      </encoding>
    </identification>
  - <defaults>
    - <scaling>
        <millimeters>7.112</millimeters>
        <tenths>40</tenths>
      </scaling>
    - <page-layout>
        <page-height>1591</page-height>
        <page-width>1246</page-width>
      - <page-margins type="both">
          <left-margin>55</left-margin>
          <right-margin>98</right-margin>
          <top-margin>50</top-margin>
          <bottom-margin>60</bottom-margin>
        </page-margins>
      </page-layout>
    - <system-layout>
      - <system-margins>
          <left-margin>0</left-margin>
          <right-margin>0</right-margin>
        </system-margins>
        <system-distance>146</system-distance>
        <top-system-distance>102</top-system-distance>
      </system-layout>
    - <staff-layout>
        <staff-distance>93</staff-distance>
      </staff-layout>
      <music-font font-family="Maestro" font-size="20.2" />
      <word-font font-family="Times New Roman" font-size="10.1" />
    </defaults>
  - <credit>
      <credit-words default-x="600" default-y="1495" font-size="20.2" font-weight="bold"
        justify="center" valign="top">Elite Syncopations</credit-words>
      <credit-words default-x="1148" default-y="1413" font-weight="bold" justify="right"
        valign="top">Scott Joplin</credit-words>
    </credit>
  - <part-list>
    - <score-part id="P1">
        <part-name>Piano</part-name>
      - <score-instrument id="P1-I1">
          <instrument-name>Grand Piano</instrument-name>
        </score-instrument>
      - <midi-instrument id="P1-I1">
          <midi-channel>1</midi-channel>
```


XSLT

**MEI code**


```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mei (View Source for full doctype...)>
- <mei version="1.8b" xmlns:xlink="http://www.lib.virginia.edu/digital/resndev/mei/">
  - <meihead>
      <meiid meiform="meiid" />
    - <filedesc meiform="filedesc">
      - <titlestmt meiform="titlestmt">
          <title meiform="title">\"Elite Syncopations\"</title>
        - <respstmt meiform="respstmt">
            <agent type="composer" meiform="agent">Scott Joplin</agent>
          </respstmt>
        </titlestmt>
      - <pubstmt meiform="pubstmt" />
      </filedesc>
    - <profiledesc meiform="profiledesc">
      - <langusage meiform="langusage">
          <language id="lt" meiform="language" />
        </langusage>
      </profiledesc>
    - <revisiondesc meiform="revisiondesc">
      - <change meiform="change">
        - <changedesc meiform="changedesc">
            <p meiform="p">Transcoded from MusicXML version 1.1</p>
          </changedesc>
          <date meiform="date">2007-04-20-04:00</date>
        </change>
      </revisiondesc>
    - <sourcedesc meiform="sourcedesc">
      - <source meiform="source">
        - <titlestmt meiform="titlestmt">
            <title meiform="title">\"Elite Syncopations\"</title>
          - <respstmt meiform="respstmt">
              <agent type="composer" meiform="agent">Scott Joplin</agent>
            </respstmt>
          </titlestmt>
        - <notesstmt meiform="notesstmt">
            <bibnote type="software" meiform="bibnote">Finale 2005 for Windows</bibnote>
            <bibnote type="software" meiform="bibnote">Dolet 3.0.2 for Finale</bibnote>
            <bibnote type="encoding date" meiform="bibnote">2005-11-16</bibnote>
          </notesstmt>
        </source>
      </sourcedesc>
    </meihead>
  - <work>
    - <music meiform="music">
      - <mdiv meiform="mdiv">
        - <score meiform="score">
          - <scoredef page.scale="40:7.112" page.units="mm" page.height="1591"
              page.width="1246" page.leftmar="55" page.rightmar="98" page.topmar="50"
              page.botmar="60" system.leftmar="0" system.rightmar="0" spacing.system="146"
              system.topmar="102" spacing.staff="93" music.name="Maestro" music.size="20.2"
              text.name="Times New Roman" text.size="10.1" meiform="scoredef">
            - <pghead1 meiform="pghead1">
              - <fw meiform="fw">
                - <fwr y="1495" meiform="fwr">
                  - <fwd x="600" meiform="fwd">
                      <rend fontsize="20.2" fontweight="bold" rend="center" valign="top"
                        meiform="rend">Elite Syncopations</rend>
                    </fwd>
                  </fwr>
                - <fwr y="1413" meiform="fwr">
```


XSLT/ MUP