Translating the Bible

into music

[Fantasia Apocalyptica]

COLLEGE OF SCIENCE

Office of the Dean

TEXAS A&M UNIVERSITY

December 5, 2017

Dr. Donald E. Knuth
Department of Computer Science
Gates Building 4B
Stanford University
Stanford, CA 94305-9045

Dear Dr. Knuth:

On behalf of the nominating committee for the Ide & Luella Trotter Prize and Endowed Lecture Series, I am pleased and honored to inform you that you have been selected as one of the recipients of the 2017-2018 Trotter Prize, awarded annually by Texas A&M University.

The Trotter Prize in Information, Complexity, and Inference was established in 2001 to recognize pioneering contributions to the understanding of the role of information, complexity and inference in illuminating the mechanisms and wonder of nature. Previous winners include Francis S. Collins, Francis Everitt, Roger Penrose, Charles Townes, and Steven Weinberg.

The Trotter Prize consists of a modest $5,000 cash honorarium, along with an invitation to present a public evening lecture on the Texas A&M campus.

The Trotter Lecture Series is intended to reveal connections between science and religion, often viewed in academia as non-overlapping if not rival worldviews. Ideally each Trotter Lecturer will acquaint the audience with the essentials and intriguing complexities of their area of specialization and inferences drawn from them. At the same time they should address the task of building substantive connections on issues of broad and lasting significance between academic cultures.

I would appreciate a response from you at your earliest convenience indicating your willingness to accept this prize and the associated lecture opportunity at Texas A&M University. Further details regarding additional related activities will be forthcoming, depending on your response, but in the event you have any questions or concerns, please feel free to contact me.

For additional information about the series, including past winners and topics, please visit http://www.science.tamu.edu/events/trotter.

Again, congratulations on your selection as well as your outstanding accomplishments! We look forward to your visit to our campus.

Best wishes,

Meigan Aronson

Meigan Aronson
Dean, College of Science

517 Blocker Building
3257 TAMU
College Station, TX 77843-3257

Tel. 979.845.7361 Fax. 979.845.6077
www.science.tamu.edu

Printed on ENVIRONMENT® Paper which is made with 100% postconsumer fiber from well-managed forests, using 100% Certified Renewable Electricity, and is Green Seal™ Certified and Carbon Neutral Plus.

The Trotter Prize in Information, Complexity, and Inference was established in 2001 to recognize pioneering contributions to the understanding of the role of information, complexity and inference in illuminating the mechanisms and wonder of nature. Previous winners include Francis S. Collins, Francis Everitt, Roger Penrose, Charles Townes, and Steven Weinberg.

The Trotter Prize consists of a modest $5,000 cash honorarium, along with an invitation to present a public evening lecture on the Texas A&M campus.

The Trotter Lecture Series is intended to reveal connections between science and religion, often viewed in academia as non-overlapping if not rival worldviews. Ideally each Trotter Lecturer will acquaint the audience with the essentials and intriguing complexities of their area of specialization and inferences drawn from them. At the same time they should address the task of building substantive connections on issues of broad and lasting significance between academic cultures.

I would appreciate a response from you at your earliest convenience indicating your willingness to accept this prize and the associated lecture opportunity at Texas A&M University. Further details regarding additional related activities will be forthcoming, depending on your response, but in the event you have any questions or concerns, please feel free to contact me.

Musica est exercitium arithmeticæ occultum nescientis se numerare animi.

— GOTTFRIED LEIBNIZ, letter to Christian Goldbach (17 April 1712)

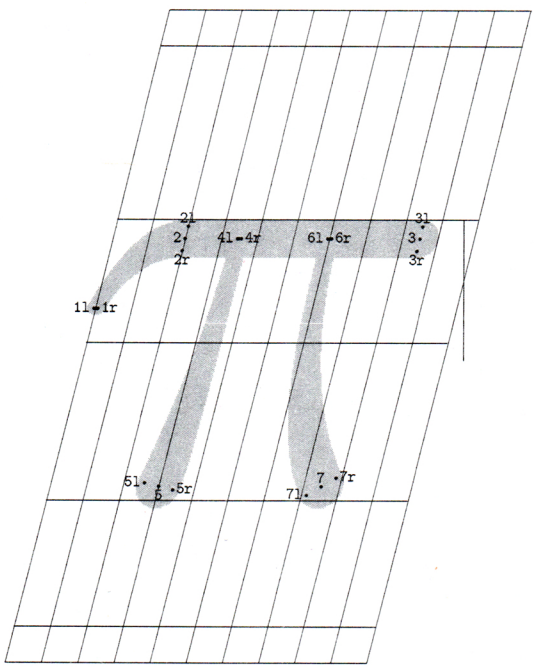
PREFACE

Here is your book, the one your thousands of letters have asked us to publish. It has taken us years to do, checking and rechecking countless recipes to bring you only the best, only the interesting, only the perfect. Now we can say, without a shadow of a doubt, that every single one of them, if you follow the directions to the letter, will work for you exactly as well as it did for us, even if you have never cooked before.

— *McCall's Cookbook* (1963)

THE PROCESS of preparing programs for a digital computer is especially attractive, not only because it can be economically and scientifically rewarding, but also because it can be an aesthetic experience much like composing poetry or music. This book is the first volume of a multi-volume set of books that has been designed to train the reader in various skills that go into a programmer's craft.

```
cmchar "Lowercase Greek pi";
beginchar(oct "031", 10u#, x_height#, 0);
italcorr x_height# * slant + .5stem# - u#;
adjust_fit(0, 0); pi_stroke;                                    % hook and bar
pos4(hair, 0); pos6(hair, 0); x4 = 3.5u; x6 = w - 4u; y4 = y6 = y2;
x5 = 3u; x7 = w - 2.5u; y5 = y7 = .5stem - oo;
pair v[]; v1 = (z4 - z5) xscaled 3.14159; v2 = (z6 - z7) xscaled 3.14159;
pos5(stem, angle v1 - 90); pos7(stem, angle v2 - 90);
filldraw circ_stroke z5e{v1} ... {up}z4e;                       % left stem
filldraw circ_stroke z7e{v2} ... {up}z6e;                       % right stem
math_fit(-.7x_height# * slant + .5hair# + .5u#, ic# - 1/3x_height# * slant);
penlabels(1, 2, 3, 4, 5, 6, 7); endchar;
```



```
def pi_stroke = pickup fine.nib;
  pos1(hair, 0); pos2(vstem, -90); pos3(vstem, -90);
  x1 - .5hair = hround -.5hair; x2 = 2u; x3 = w - 1.5u;
  y1 = x_height - x_height/3.141592653589793; y2 = y3; top y3l = x_height;
  filldraw circ_stroke z3e --- z2e ... {x1 - x2, 3.14159(y1 - y2)}z1e enddef;
```

23 Nov 2011

In this book I plan to jot down thoughts for a project that may be crazy, but a "muse" has been encouraging me to embark upon it for more than 40 years. I hope to be able to write a piece of organ music that's based on the text of the Apocalypse (the mystical Book of Revelation), using the basic philosophy of Oulipo [more properly Oumupo], namely: constraints help to create great art. My model is Georges Perec's magnificent novel La Vie Mode d'Emploi [Life, A User's Manual] for which each of the 100 (or 99) chapters was written with something like 45 constraints in mind. I recall reading about

I should mention that I consider this part of the Bible to be totally mystical and spiritual rather than literal or prophetical. It probably was written to provide an underground movement (early Christianity) with some coded messages of hope. But I'm intrigued by the fact that so many artists and writers have been inspired by these words, for nearly 2000 years by now; thus I can't resist the thought that perhaps I too might be led by these ancient words to create something that may be newly meaningful to people of the 21st century. Of course I may fail totally, and any music I write might be basically worthless. But, as I said, something has been urging me to do this for a long time, and I find that I cannot resist trying.

⋮
star
sun
sweet
temple
ten
thanks
three
three and a half
throne
thunder
torment
trampling
true
trumpet
twelve
voice
wall
war
⋮

‘woe’ = blues scale;

‘elders’ = chromatic scale;

‘lion’ = octatonic scale;

‘sweet’ = major key;

‘sour’ = minor key;

‘prophet’ = contrary motion;

‘sun’ = palindrome;

‘gold’ = close harmony.

ΚΑΙ ΕΙΔΟΝ ΟΤΙ ΗΝΟΙΞΕ ΤΟ ΑΡΝΙΟΝ ΜΙΑΝ ΕΚ ΤΩΝ ΕΠΤΑ ΣΦΡΑΓΙΔΩΝ ΚΑΙ ΗΚΟΥΣΑ ΕΝΟΣ ΕΚ ΤΩΝ ΤΕΣΣΑΡΩΝ ΖΩΩΝ ΛΕΓΟΝΤΟΣ ΩΣ ΦΩΝΗ ΒΡΟΝΤΗΣ ΕΡΧΟΥ

ΚΑΙ ΕΙΔΟΝ ΚΑΙ ΙΔΟΥ ΙΠΠΟΣ ΛΕΥΚΟΣ ΚΑΙ Ο ΚΑΘΗΜΕΝΟΣ ΕΠ ΑΥΤΟΝ ΕΧΩΝ ΤΟΞΟΝ ΚΑΙ ΕΔΟΘΗ ΑΥΤΩ ΣΤΕΦΑΝΟΣ ΚΑΙ ΕΞΗΛΘΕ ΝΙΚΩΝ ΚΑΙ ΙΝΑ ΝΙΚΗΣΗ

Then I saw the Lamb break open the first of the seven seals, and I heard one of the four living creatures say in a voice that sounded like thunder, "Come!"

I looked, and there was a white horse. Its rider held a bow, and he was given a crown. He rode out as a conqueror to conquer.

♩=154

[Alain Jardin Suspendu]

Sw strings

scroll

open

Gt

diapasons

first creatures

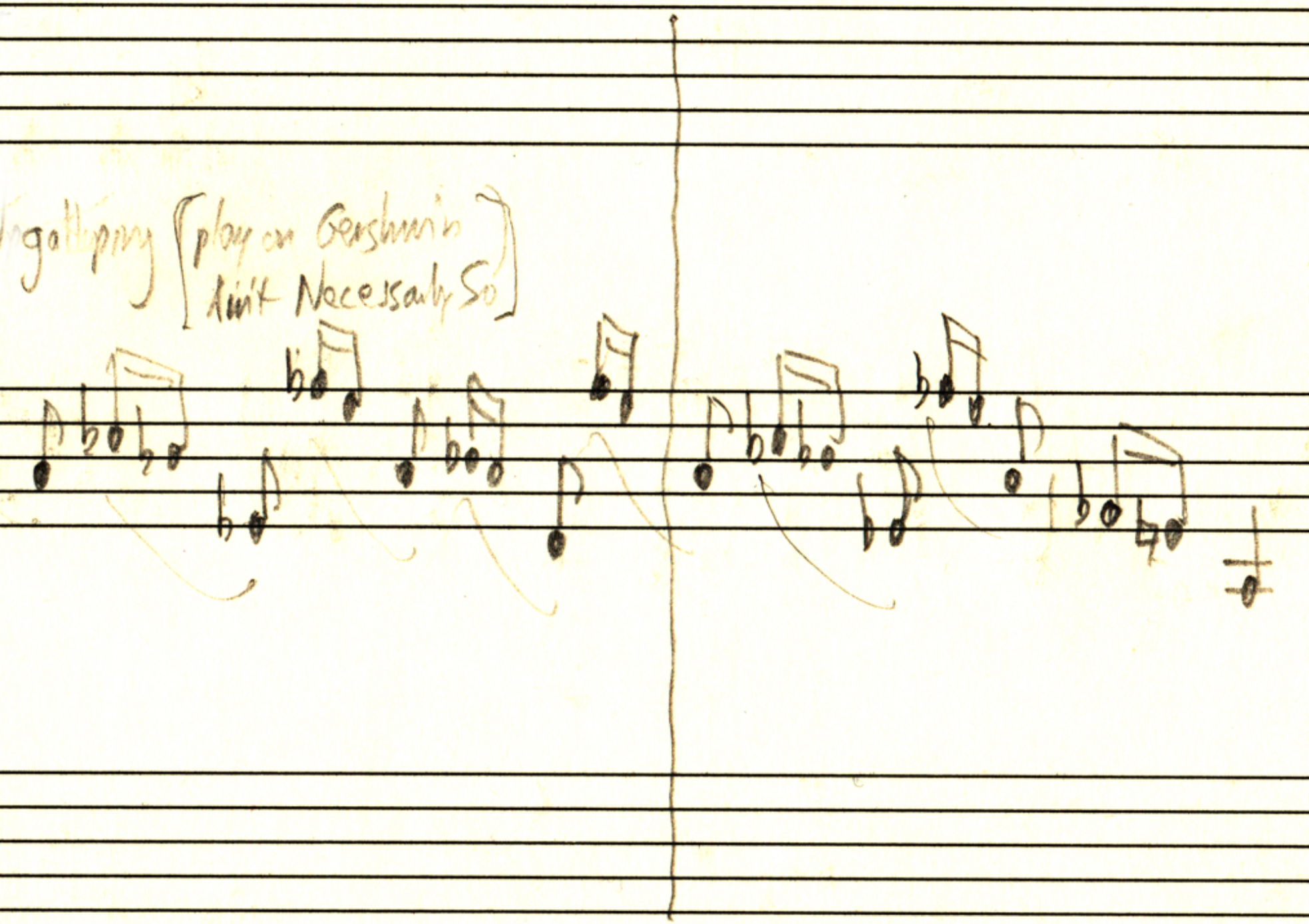
come

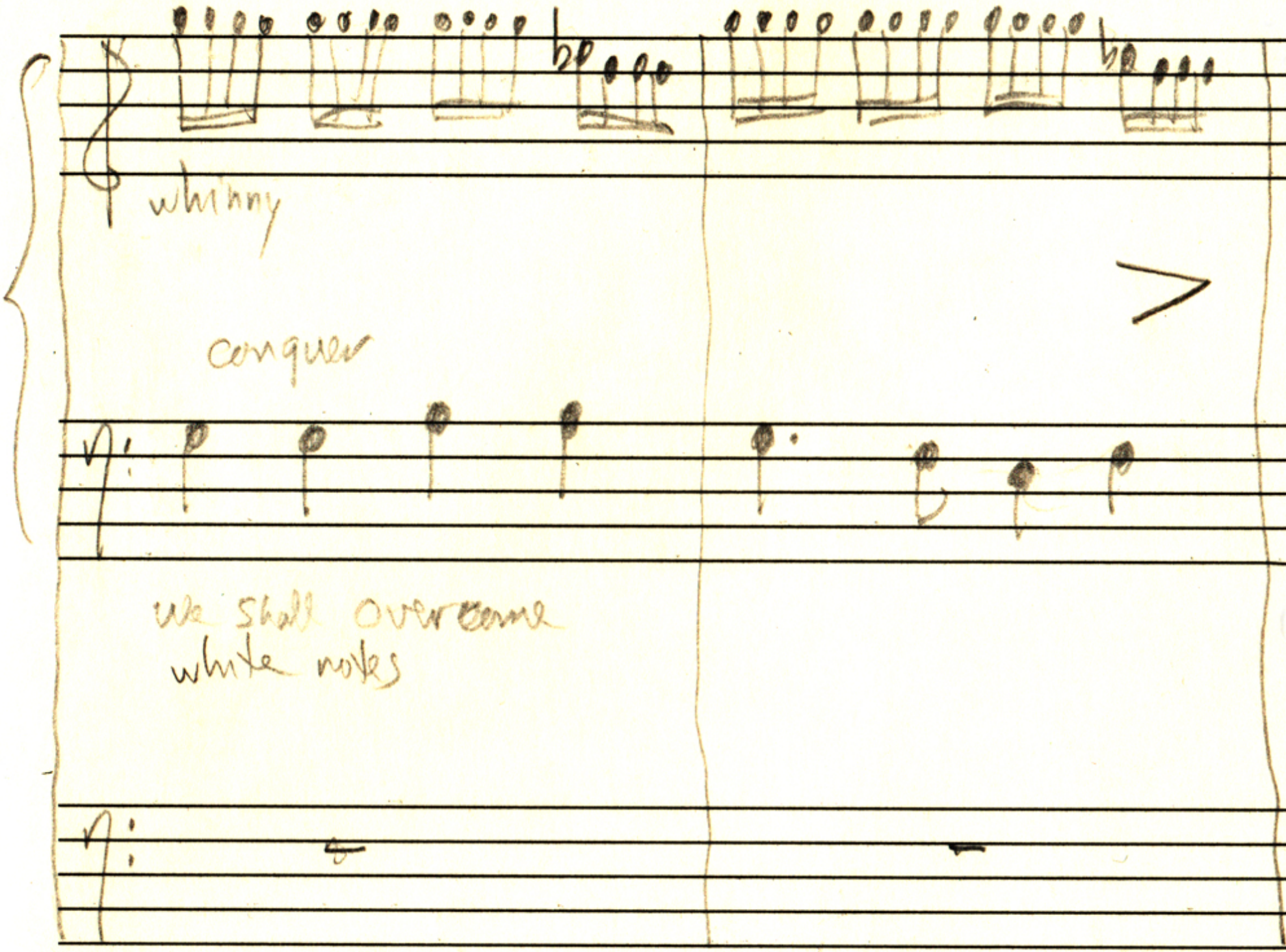
Oboe (Gt)

lamb

thunder

612

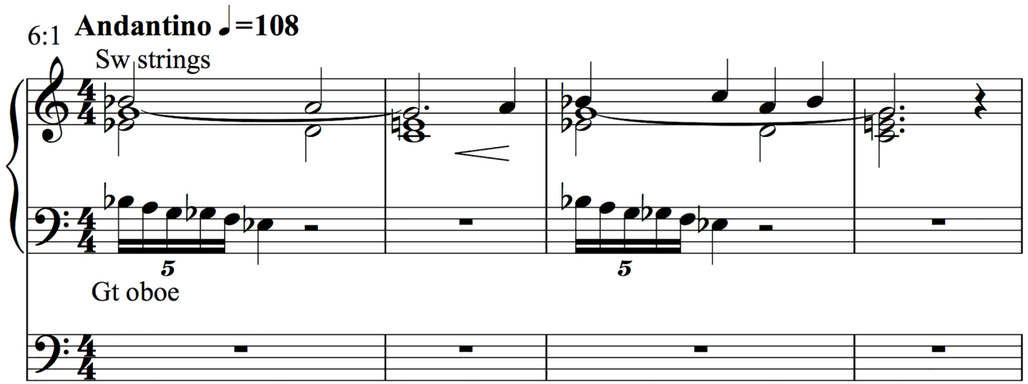


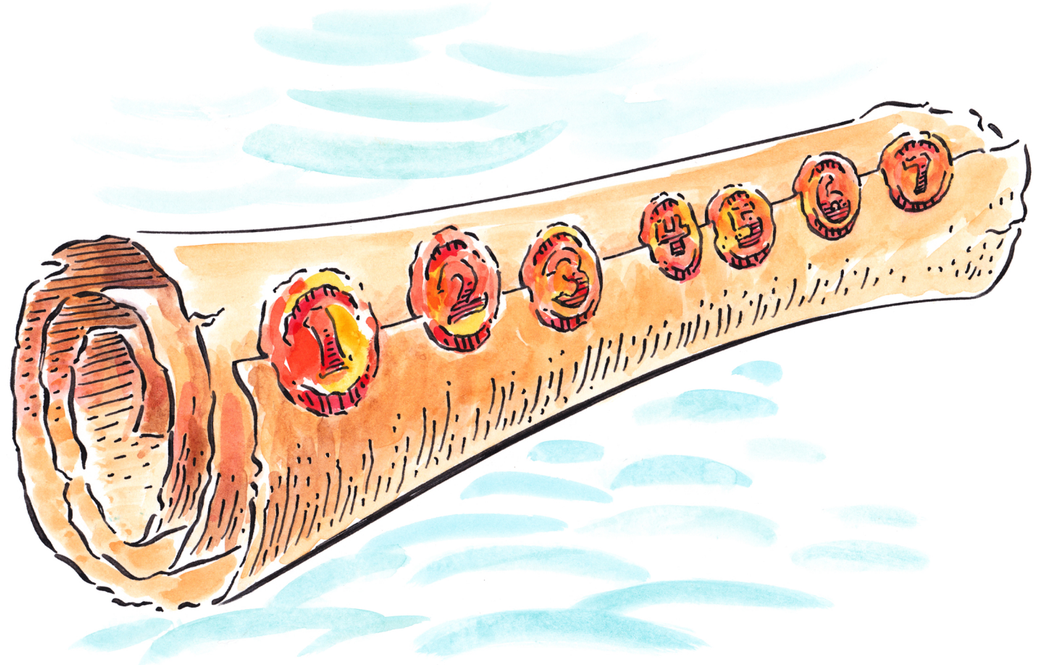

whinny
conquer
We Shall Overcome
white notes

Baaa

ΚΑΙ ΕΙΔΟΝ ΟΤΙ ΗΝΟΙΞΕ ΤΟ ΑΡΝΙΟΝ ΜΙΑΝ ΕΚ ΤΩΝ ΕΠΤΑ ΣΦΡΑΓΙΔΩΝ ΚΑΙ ΗΚΟΥΣΑ ΕΝΟΣ ΕΚ ΤΩΝ ΤΕΣΣΑΡΩΝ ΖΩΩΝ ΛΕΓΟΝΤΟΣ ΩΣ ΦΩΝΗ ΒΡΟΝΤΗΣ ΕΡΧΟΥ

Then I saw the Lamb break open the first of the seven seals, and I heard one of the four living creatures say in a voice that sounded like thunder, "Come!"

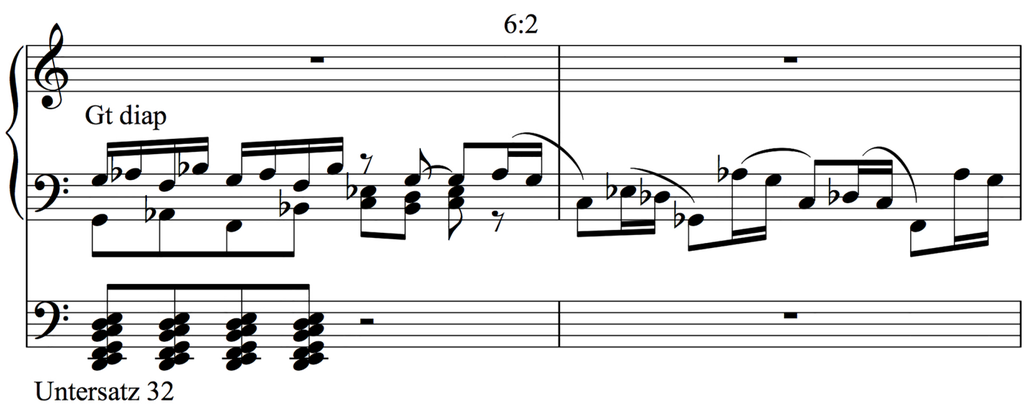




6:1 The first seal is about to be opened.

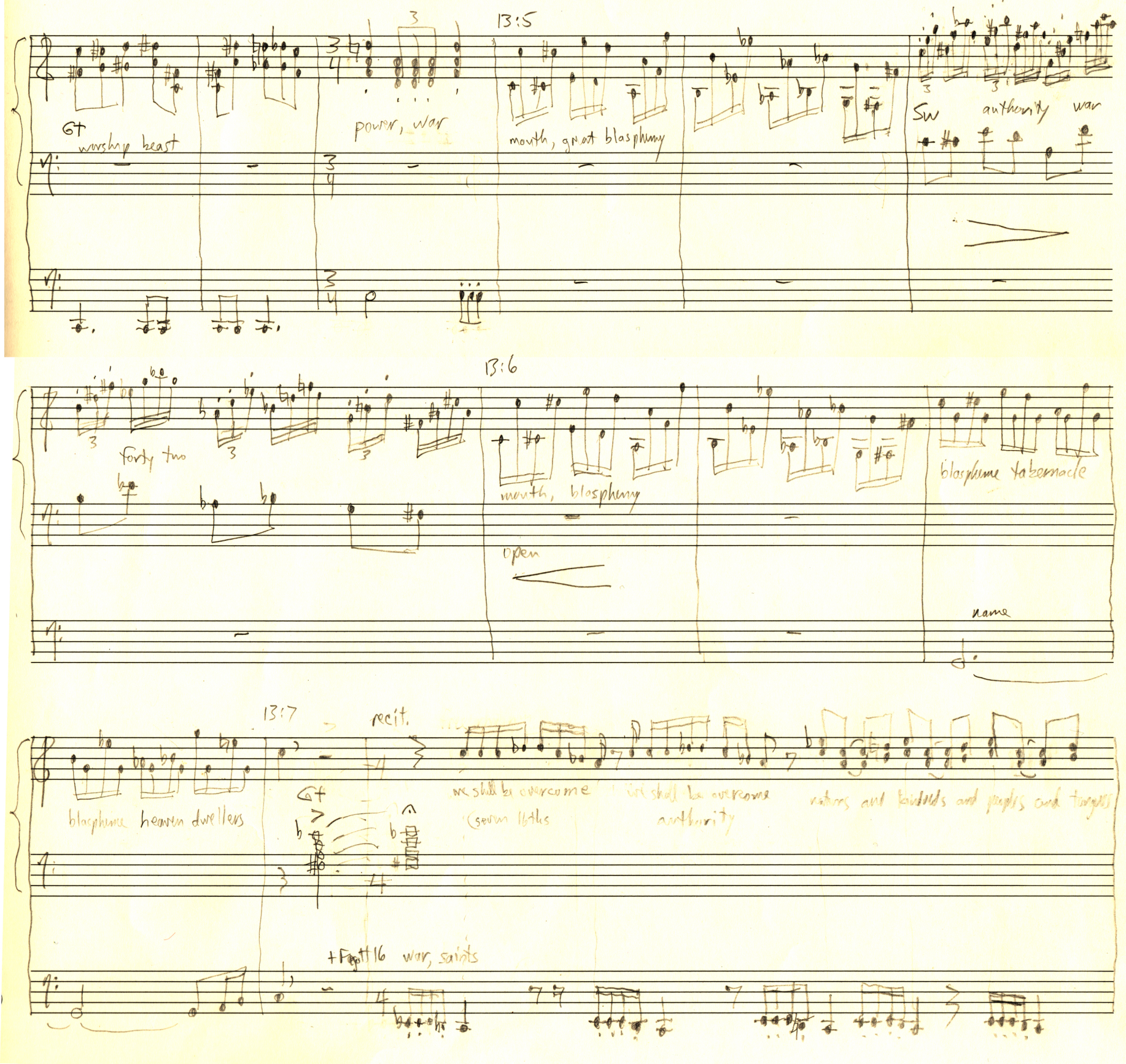
ΚΑΙ ΕΙΔΟΝ ΚΑΙ ΙΔΟΥ ΙΠΠΟΣ ΛΕΥΚΟΣ ΚΑΙ Ο ΚΑΘΗΜΕΝΟΣ ΕΠ ΑΥΤΟΝ ΕΧΩΝ ΤΟΞΟΝ ΚΑΙ ΕΔΟΘΗ ΑΥΤΩ ΣΤΕΦΑΝΟΣ ΚΑΙ ΕΞΗΛΘΕ ΝΙΚΩΝ ΚΑΙ ΙΝΑ ΝΙΚΗΣΗ

I looked, and there was a white horse. Its rider held a bow, and he was given a crown. He rode out as a conqueror to conquer.



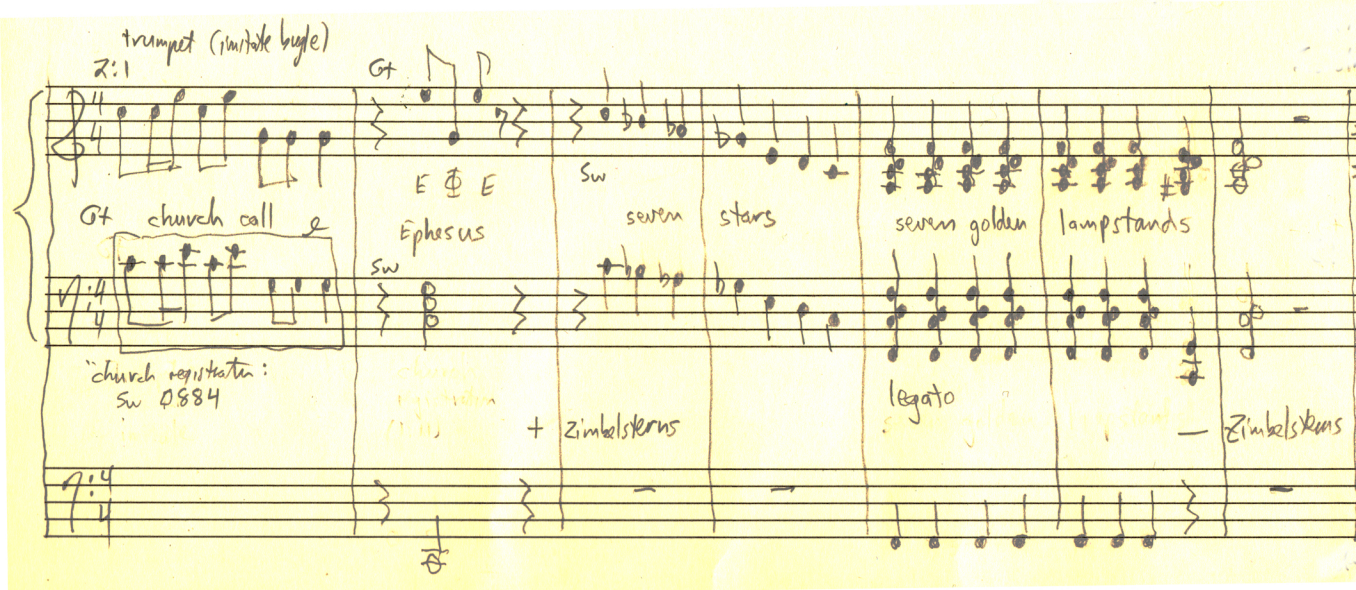
6:2 The first living creature and the white horse.

- ‘seal’ alludes to Alain,
- ‘truth’ alludes to Bach,
- ‘mighty’ alludes to Beethoven,
- ‘voice’ alludes to Borodin,
- ‘throne’ alludes to Brubeck,
- ‘cloud’ alludes to Debussy,
- ‘word’ alludes to Franck,
- ‘temple’ alludes to Gershwin,
- ‘book’ alludes to Hindemith,
- ‘worship’ alludes to Messiaen,
- ‘blasphemy’ alludes to Schoenberg.


13:5
Gt
worship beast
power, war
mouth, great blasphemy
Sw
authority
war
13:6
forty two
mouth, blasphemy
open
blasphemie tabernacle
name
13:7
recit.
blasphemie heaven dwellers
Gt
we shall be overcome
(seven 16ths
we shall be overcome
authority
nations and kindreds and peoples and tongues
+ Fagott 16
war, saints

ΤΩ ΑΓΓΕΛΩ ΤΗΣ ΕΝ ΕΦΕΣΩ ΕΚΚΛΗΣΙΑΣ ΓΡΑΨΟΝ ΤΑΔΕ ΛΕΓΕΙ
Ο ΚΡΑΤΩΝ ΤΟΥΣ ΕΠΤΑ ΑΣΤΕΡΑΣ ΕΝ ΤΗ ΔΕΞΙΑ ΑΥΤΟΥ Ο ΠΕΡΙ-
ΠΑΤΩΝ ΕΝ ΜΕΣΩ ΤΩΝ ΕΠΤΑ ΛΥΧΝΙΩΝ ΤΩΝ ΧΡΥΣΩΝ

"To the angel of the church in Ephesus write: This is the message from the one who holds the seven stars in his right hand and who walks among the seven gold lampstands.


trumpet (imitate bugle)
Z:1
Gt
Gt church call
"church registration:
Sw 0884
E Ephesus E
Sw
seven stars
seven golden lampstands
legato
+ zimbelsterns
— zimbelsterns

2:1 **Andantino ♩=104**
Gt trumpet
Sw
+ zimbelstern
legato
2:2
Sw celeste
- zimbelstern
Gt
2:3
2:4
2:5
Sw

14
Gt
2:6
2:7
Sw
Sw
Gt
a little bell rings
rit.
Andante ♩=88
Sw
Gt
Delphic registration
2:8 **Andantino ♩=104**
Gt trumpet
Andante ♩=88

24
2:9
Sw
Sw
2:10
Gt
2:11
Sw
Gt
Delphic registration

35
2:12 **Andantino ♩=104**
Gt trumpet
Sw
Sw
2:13
reed
2:14
Gt
2:15

2/15/18 © 2016 CC0 *no rights reserved*

45

2:16

2:17 **Andante** ♩=88

Sw

Gt

Delphic registration

Andantino ♩=104

2:18 Gt trumpet

Sw

Sw

55

2:19

più mosso ♩=120

Gt

2:20

2:21

Sw

70

2:22

Gt

2:23

Sw

Sw

Gt

2:24

reed *f*

2:25

83

2:26

2:27

+ soft reed

2:28

flutes

+ zimbelstern

2:29

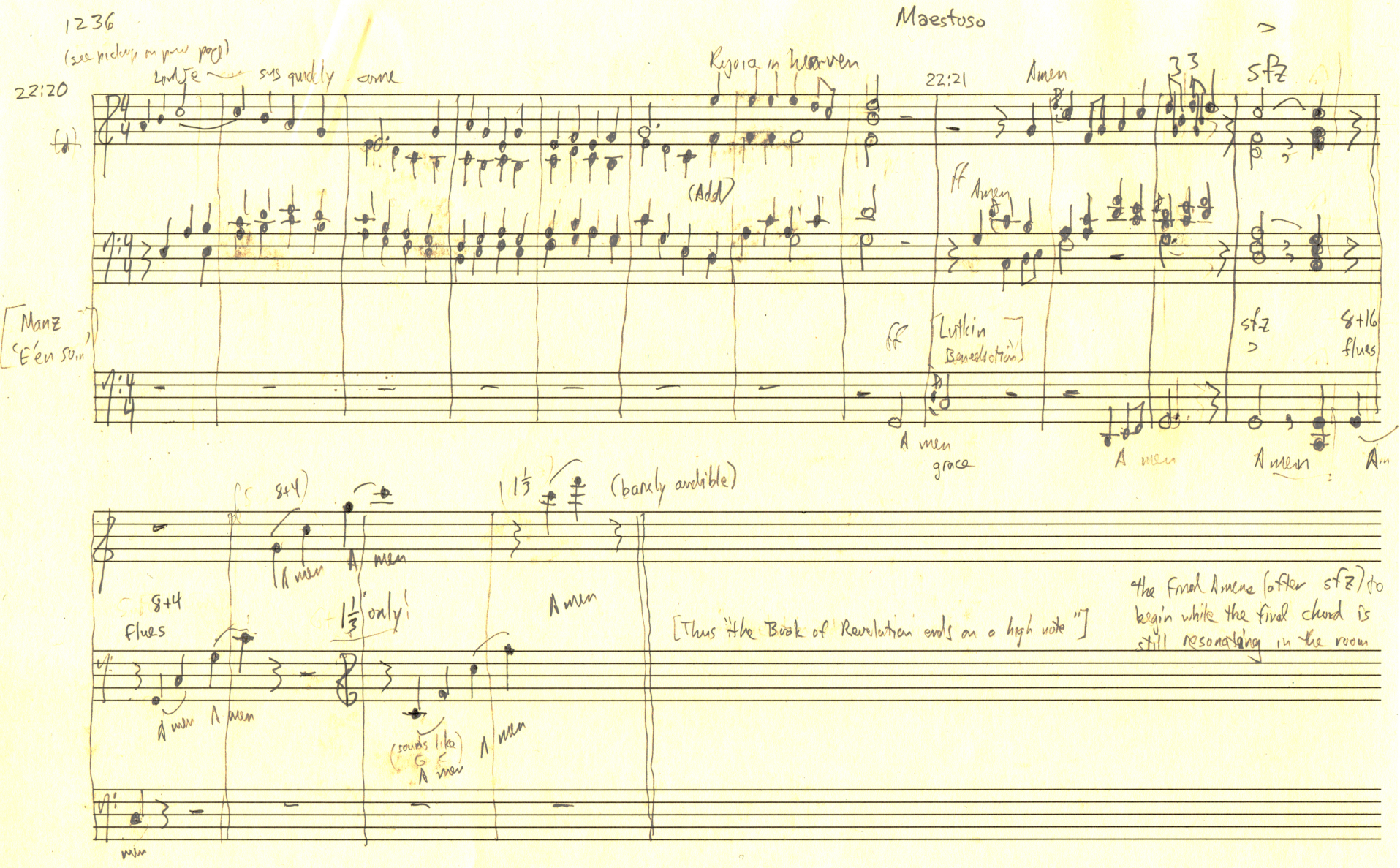
- zimbelstern

Andante ♩=88

Sw

Gt

Delphic registration


1236
Maestoso
(see pickup on prev page)
22:20
Lord Je — sus quickly come
Rejoice in heaven
22:21
Amen
sfz
(Add)
ff Amen
[Manz 'E'en so...']
ff
[Lutkin Benediction]
sfz
8+16 flues
A men
grace
A men
A men
A men
8+4
A men
A men
1 1/3
(barely audible)
8+4 flues
1 1/3 only!
A men
A men
A men
(sounds like G C)
A men
A men
[Thus "the Book of Revelation ends on a high note"]
the final Amens (after sfz) to begin while the final chord is still resonating in the room