Making Music with L-Systems

Steven Schwarz

New Music DC 2022
October 15-16, 2022

Examples

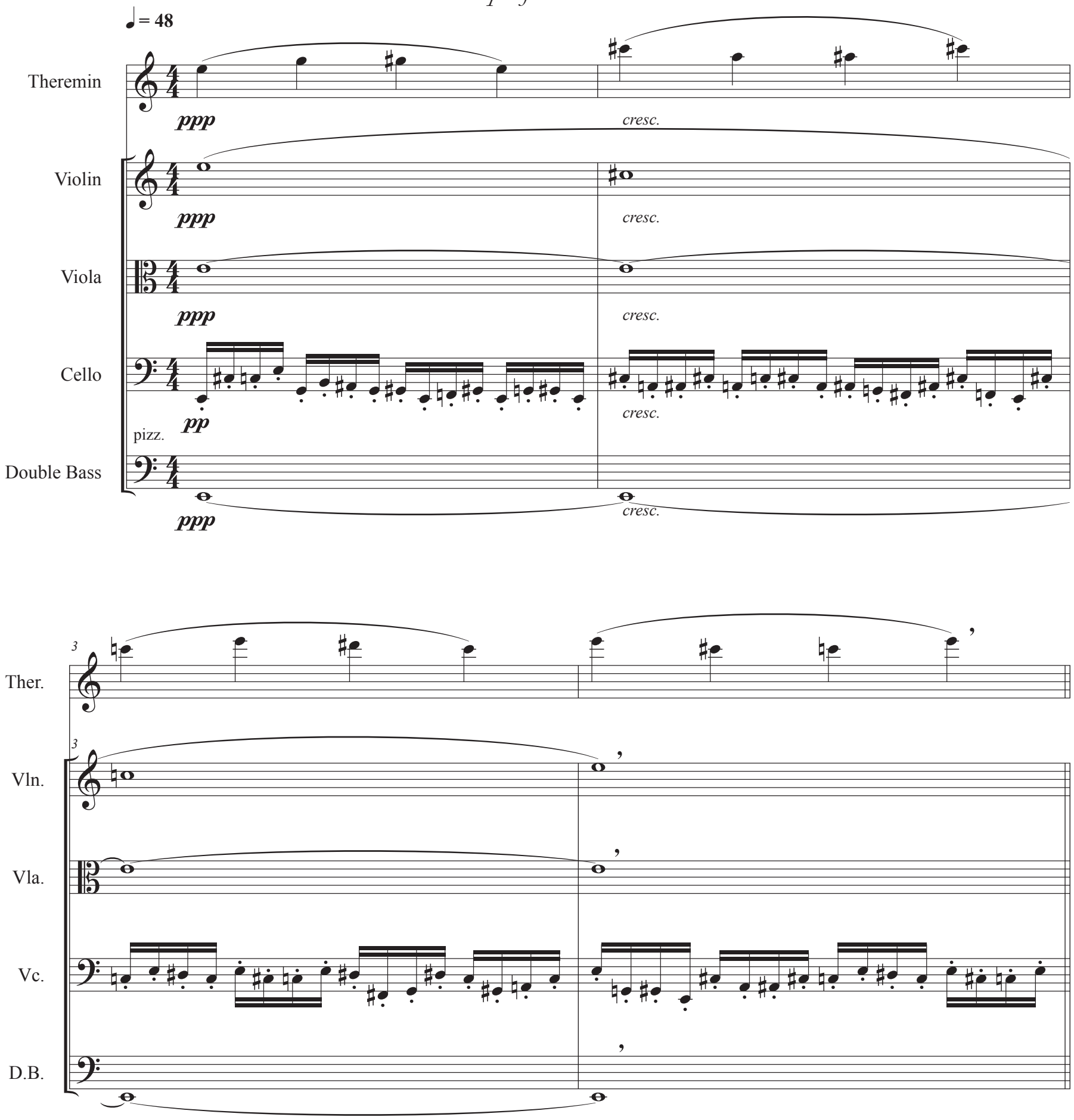
1. *generator* example
2. *branching* example
3. *Sturmian word* example
4. *single-vertex flat-fold origami* example
5. *strange attractor generator* example
6. *strange attractor Sturmian word* example
7. *strange attractor Rudin-Shapiro sequence* example
8. *Mahler (minor)*
9. *Mahler (major)*

Score

L-System

example for NMDC-2022

Steven Schwarz



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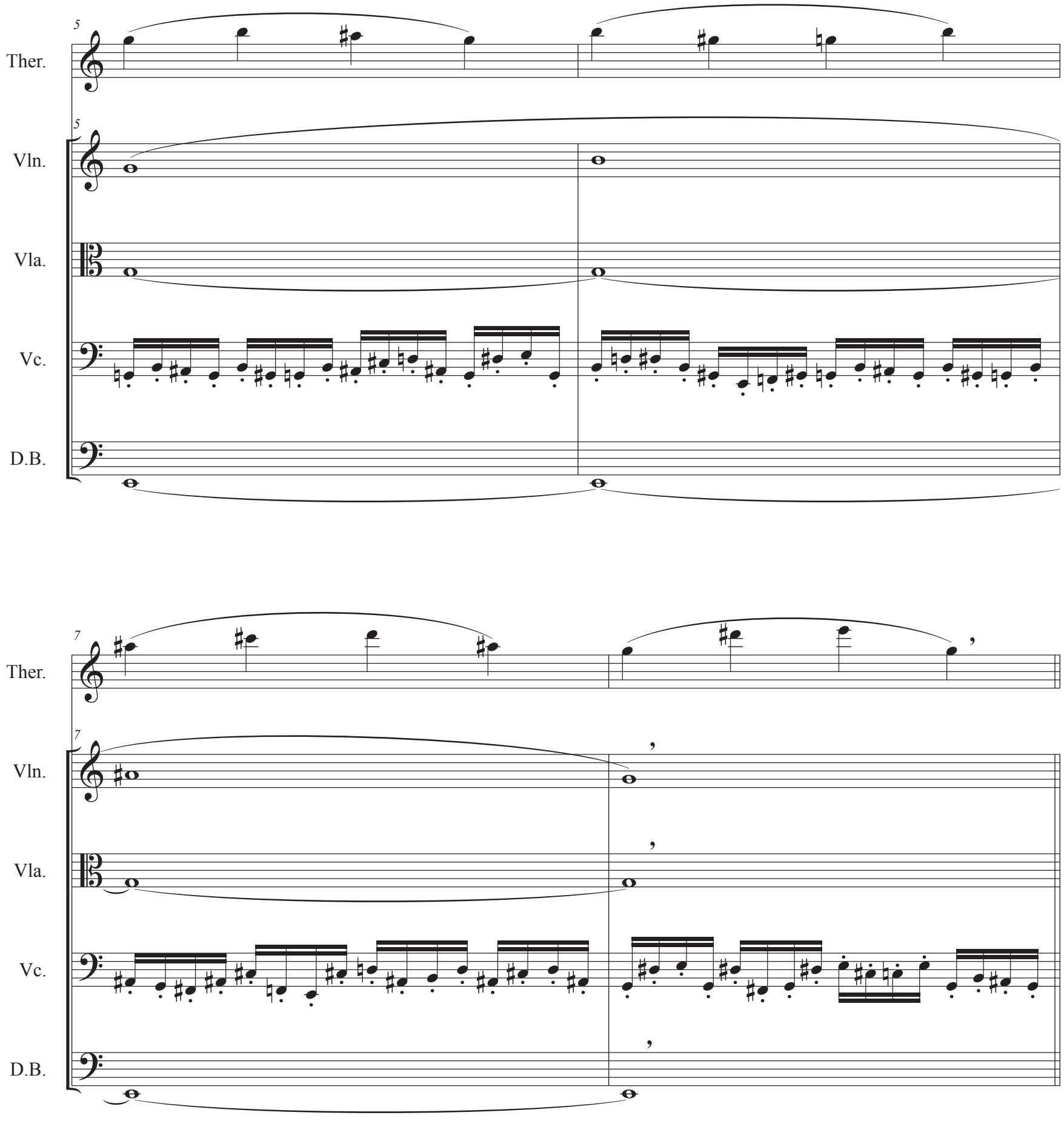
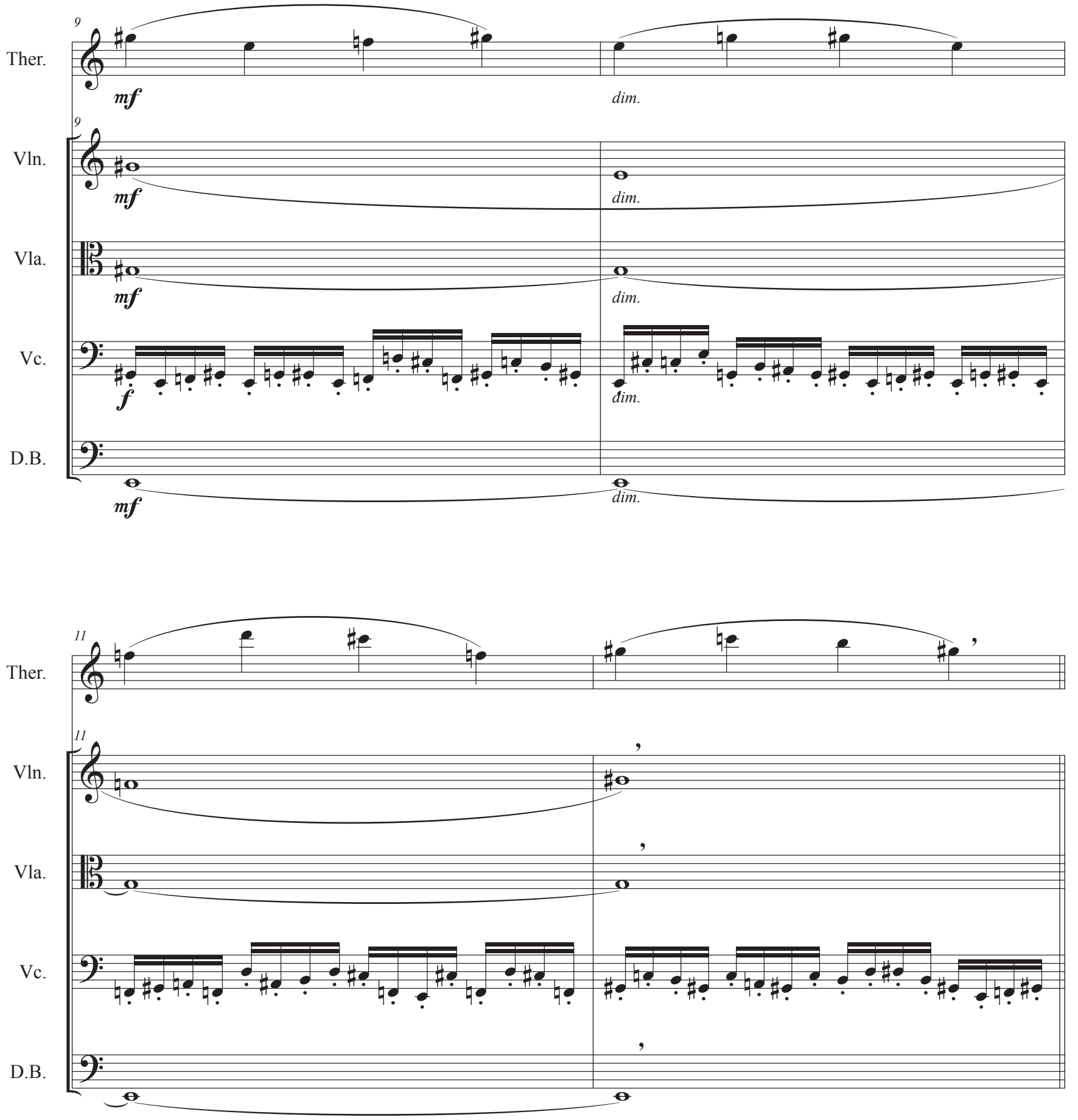
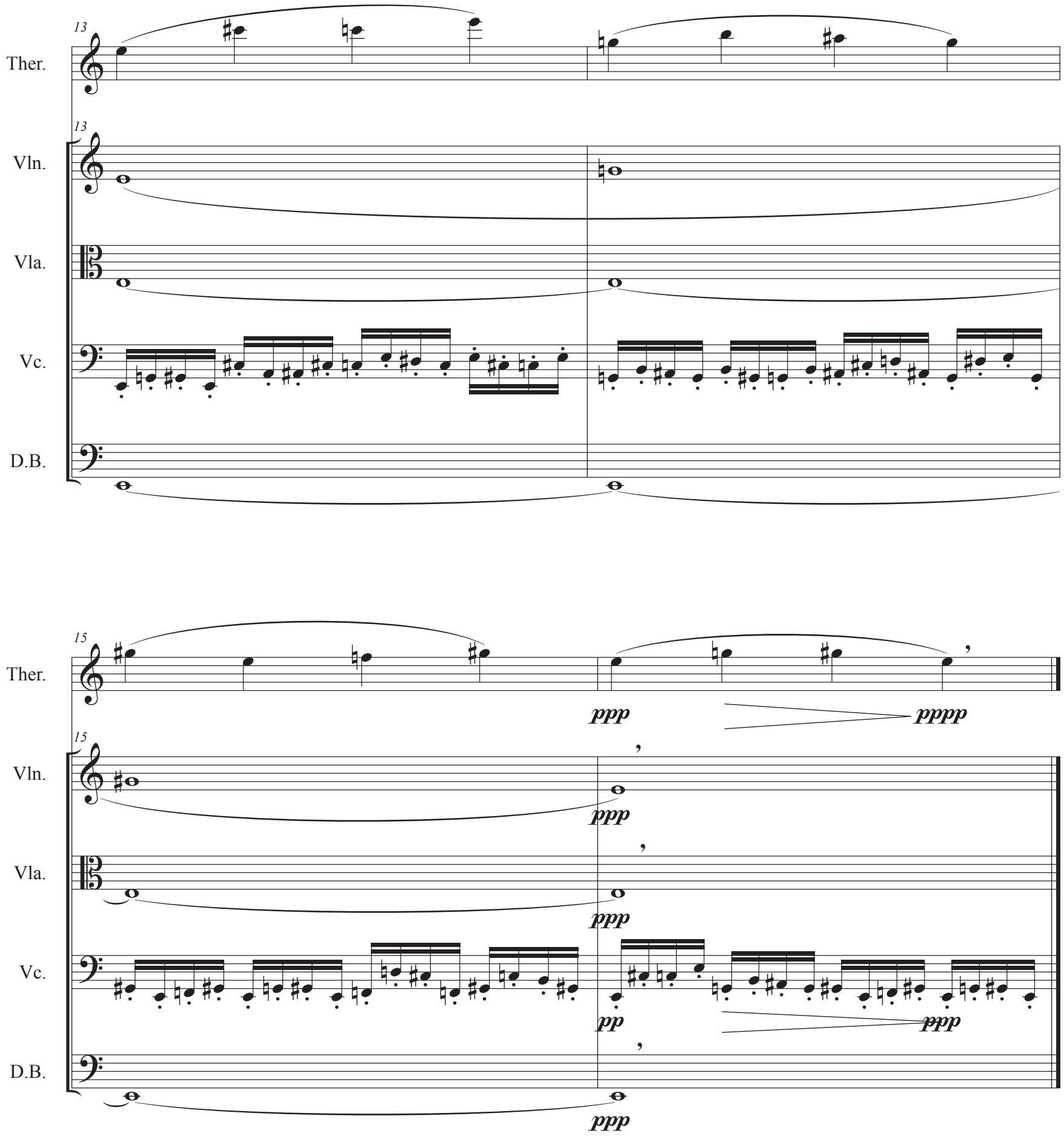

5
Ther.
5
Vln.
Vla.
Vc.
D.B.
7
Ther.
7
Vln.
Vla.
Vc.
D.B.

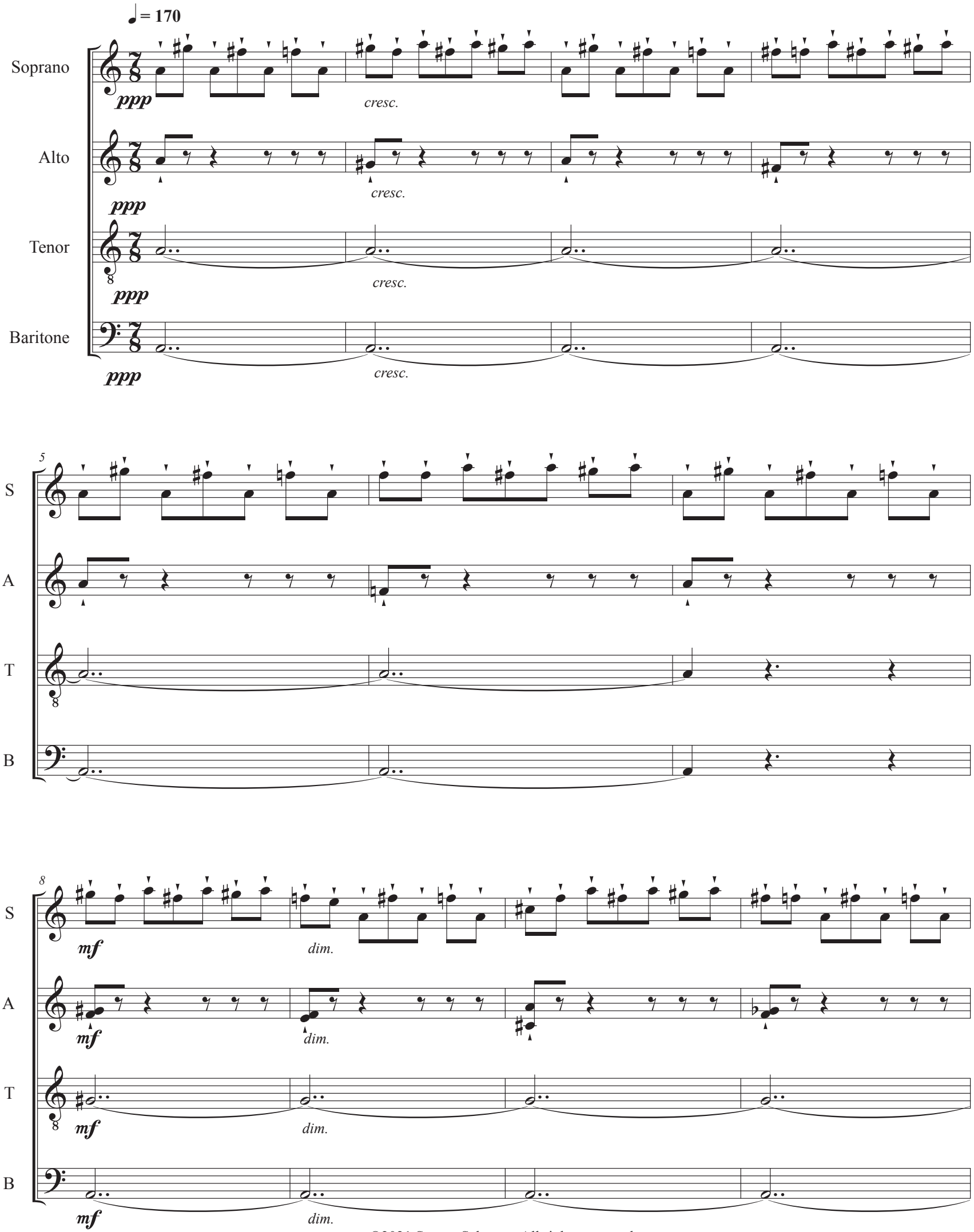

9
Ther.
mf
dim.
9
Vln.
mf
dim.
Vla.
mf
dim.
Vc.
f
dim.
D.B.
mf
dim.
11
Ther.
11
Vln.
Vla.
Vc.
D.B.


13
Ther.
13
Vln.
Vla.
Vc.
D.B.
15
Ther.
ppp
pppp
15
Vln.
ppp
Vla.
ppp
Vc.
pp
ppp
D.B.
ppp

L-Systems

Postlude: October 25, 2021

Steven Schwarz



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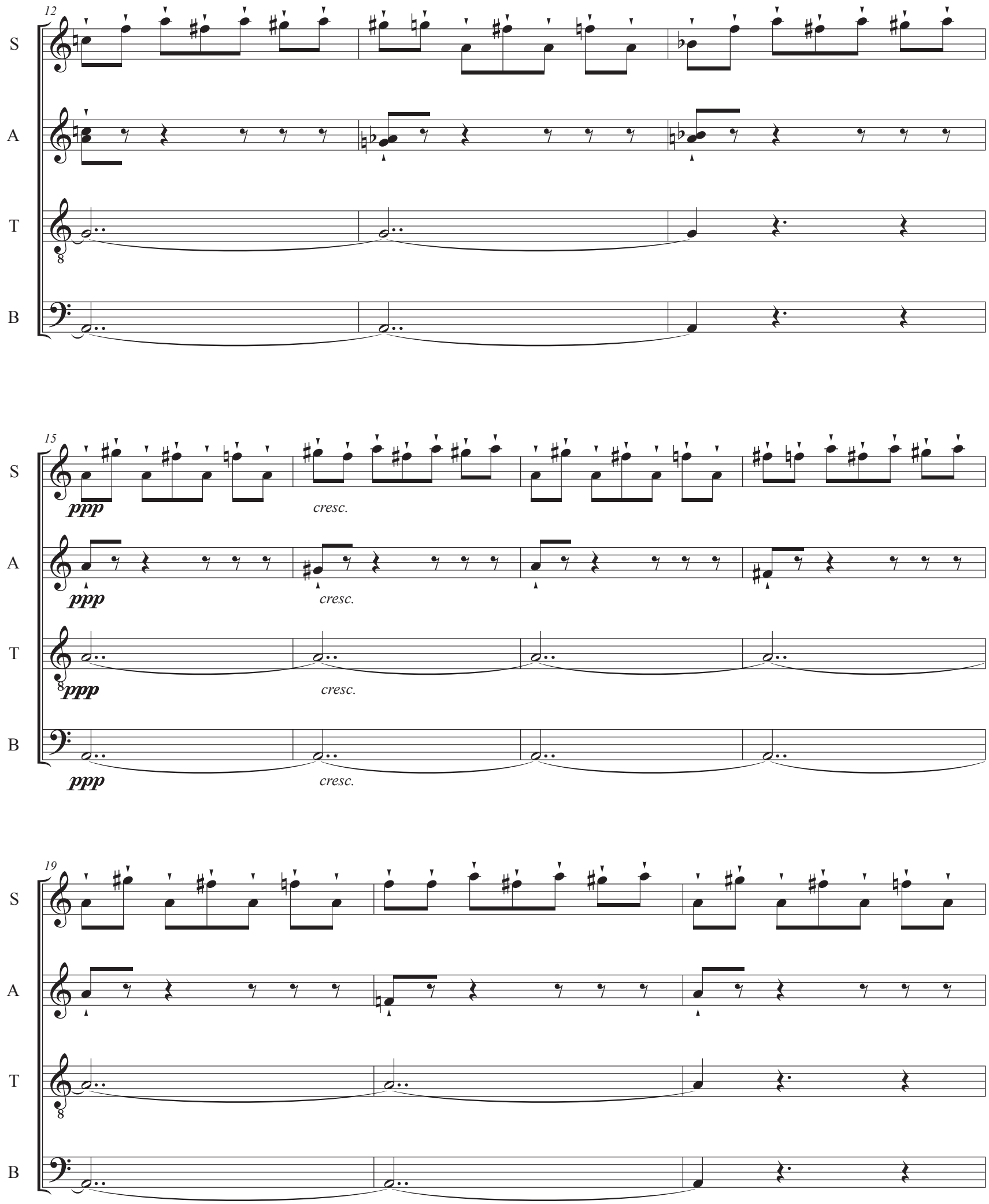
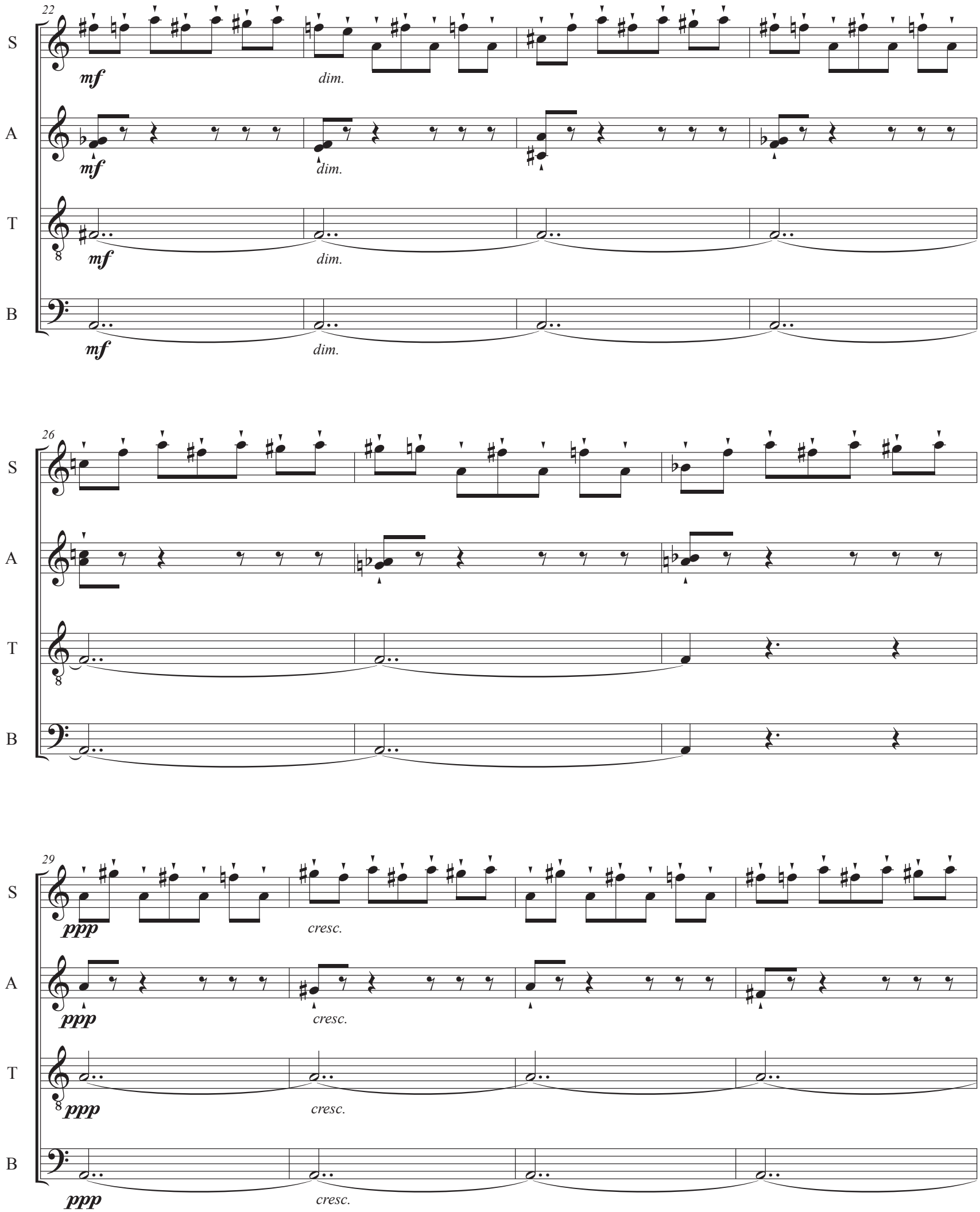
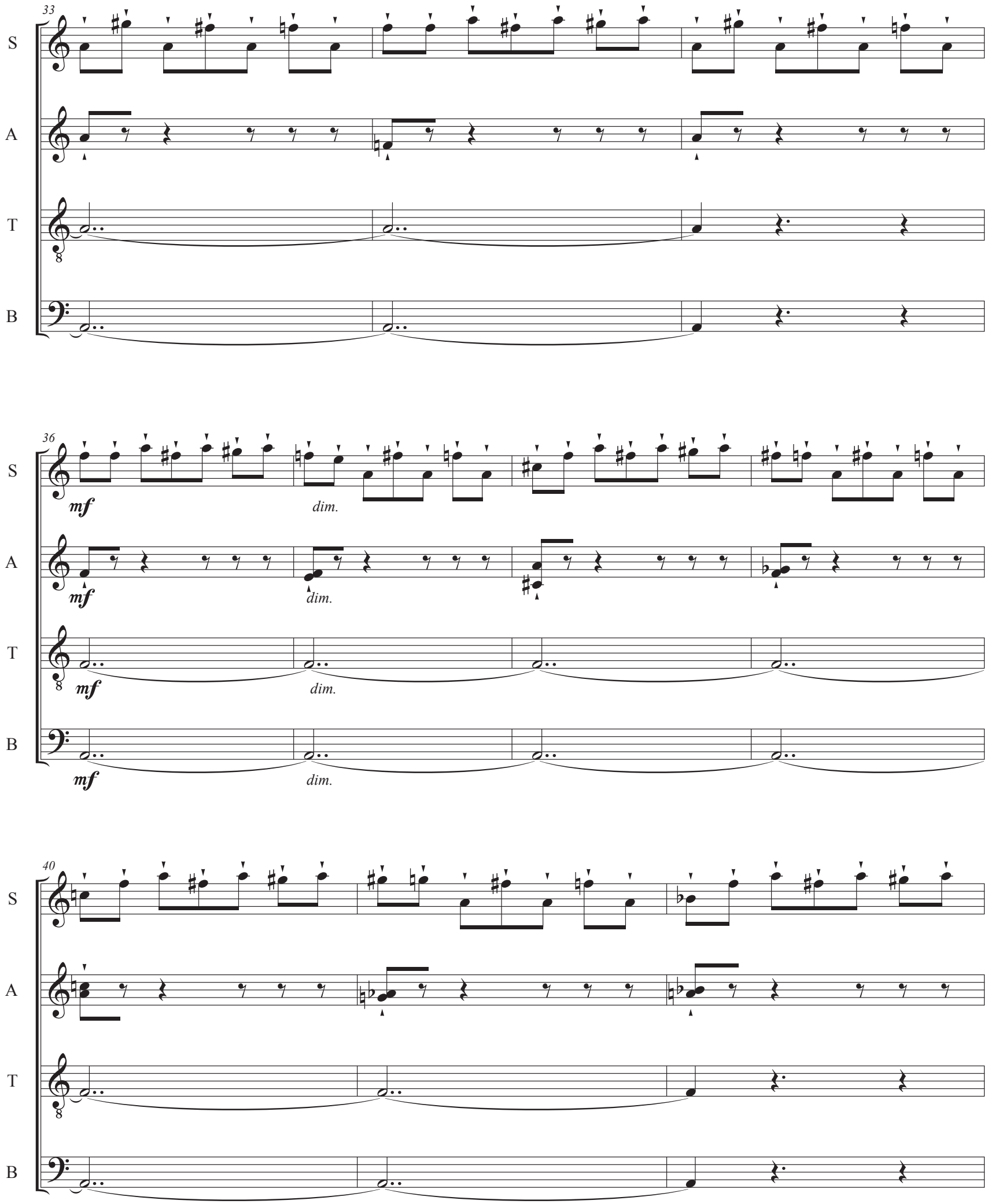
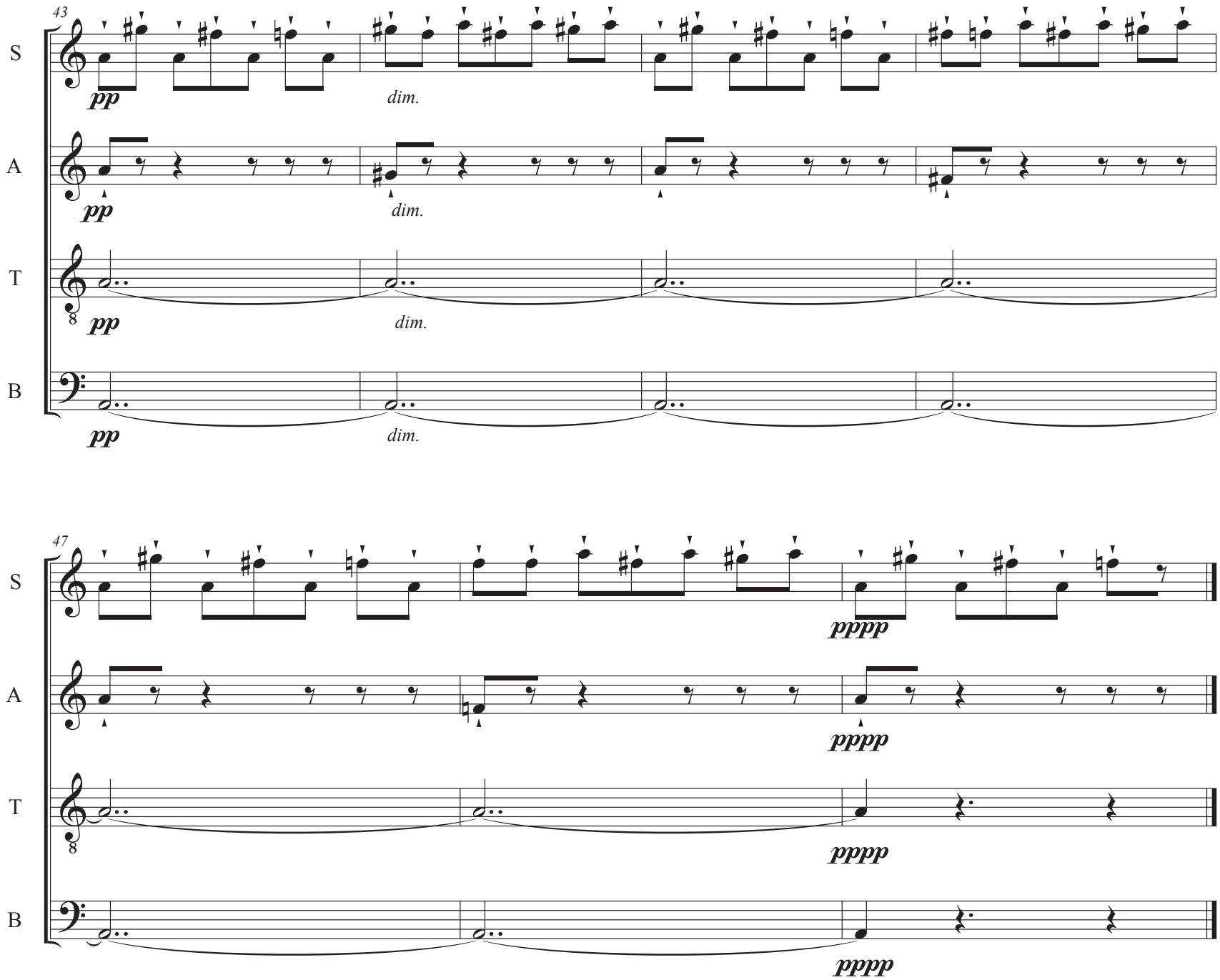

12
S
A
T
B
15
ppp
cresc.
19


22
S
A
T
B
mf
dim.
26
29
ppp
cresc.

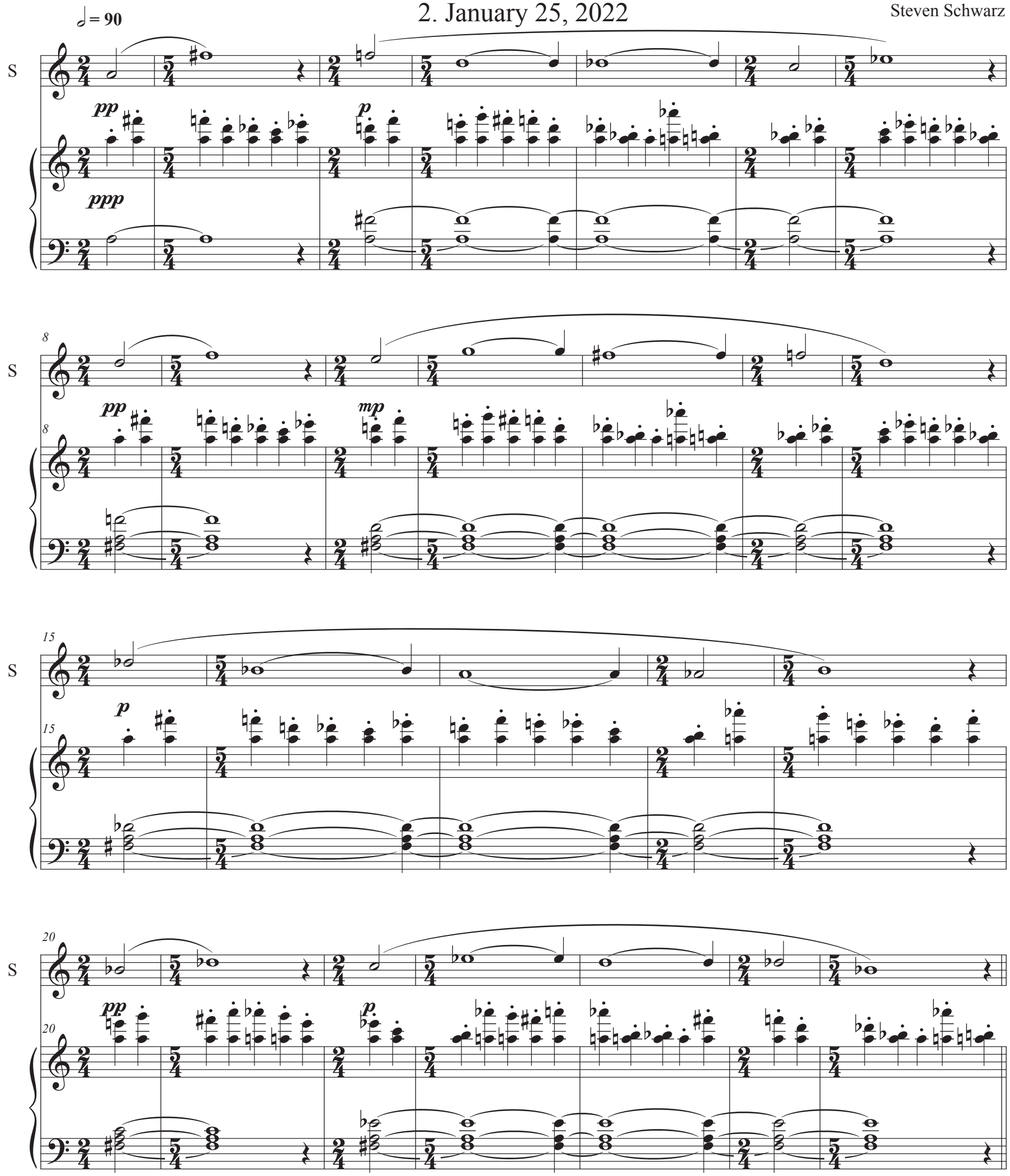

33
S
A
T
B
36
mf
dim.
40


43
S
A
T
B
pp
dim.
47
pppp

L-system

2. January 25, 2022

Steven Schwarz



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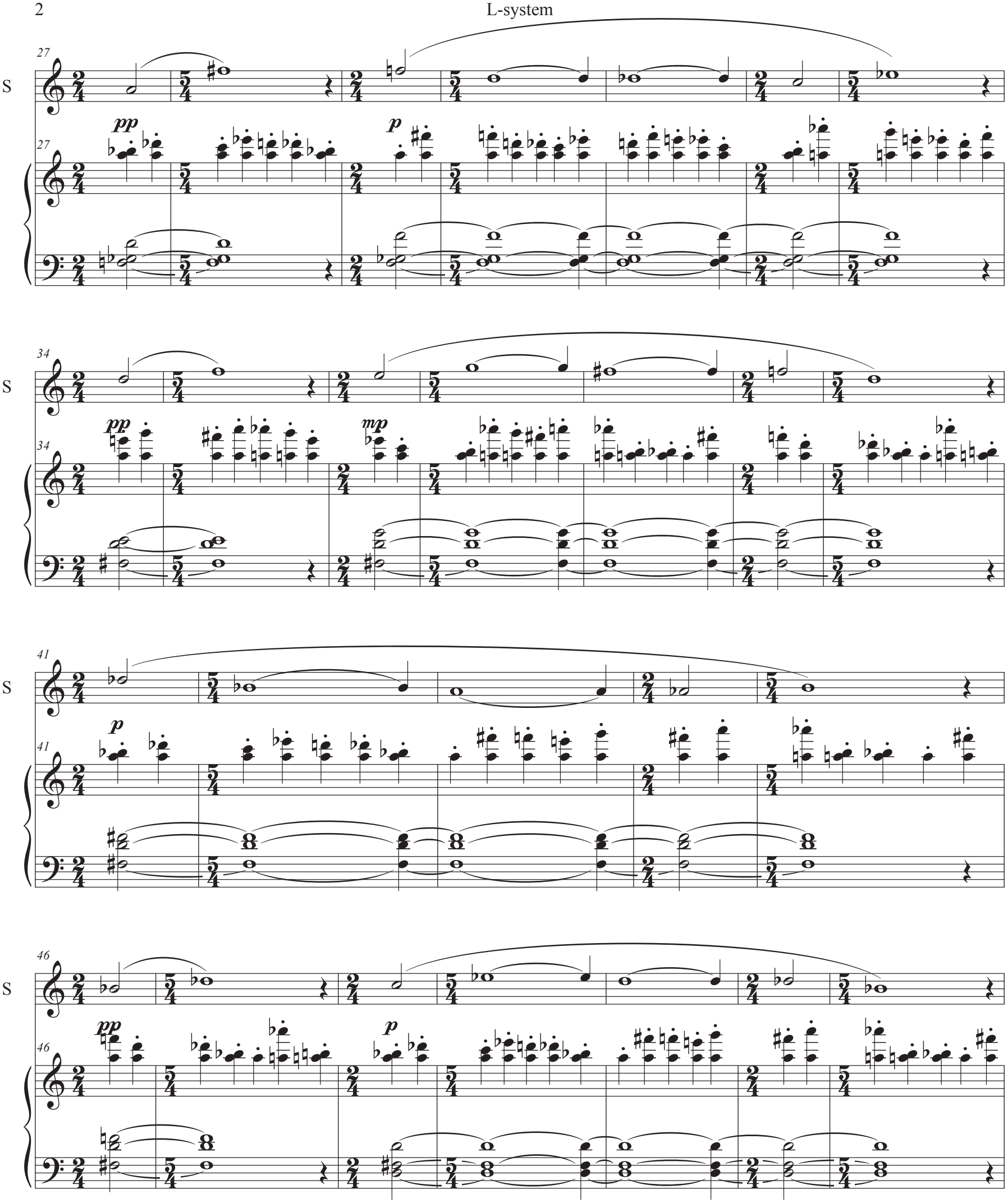
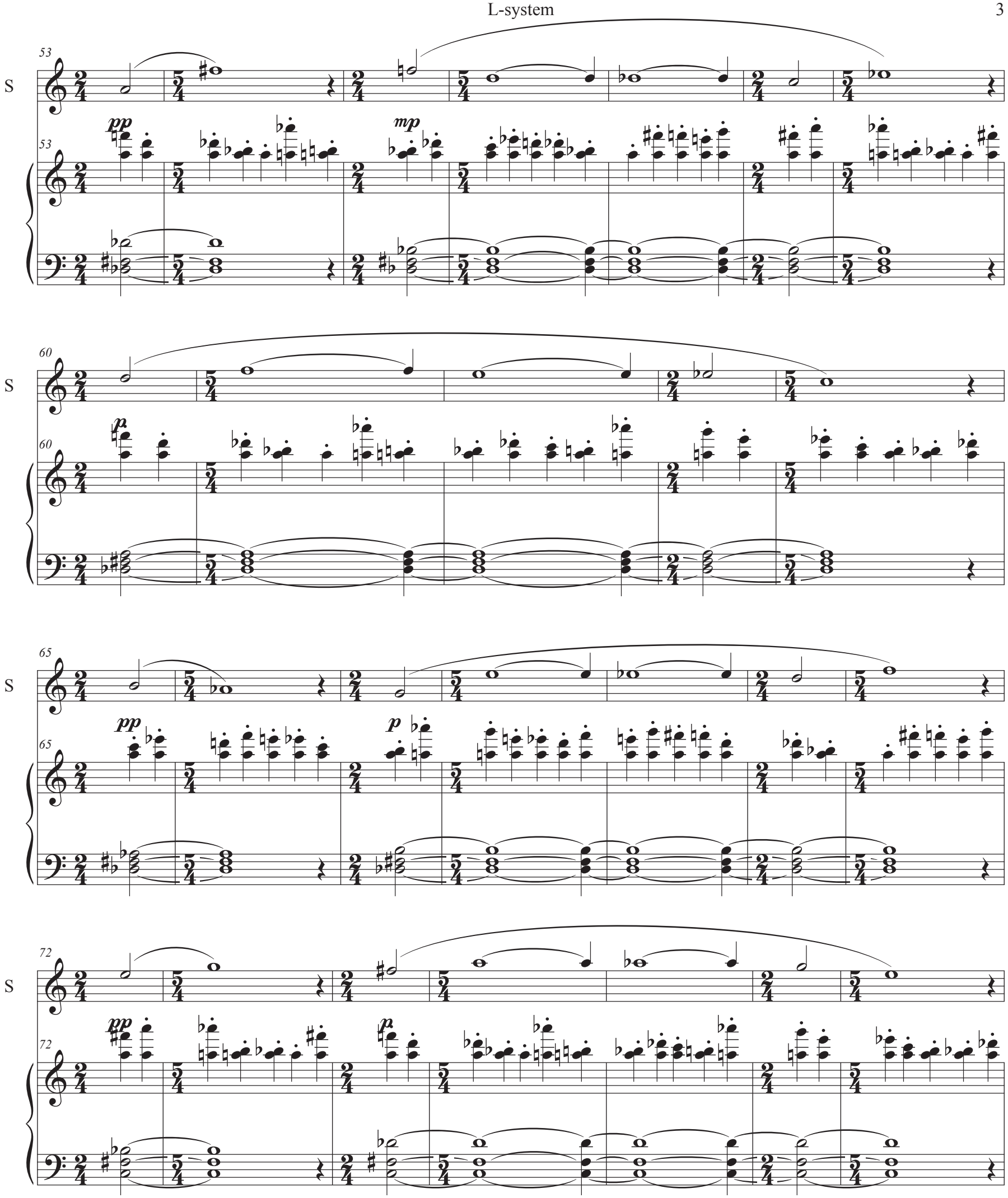
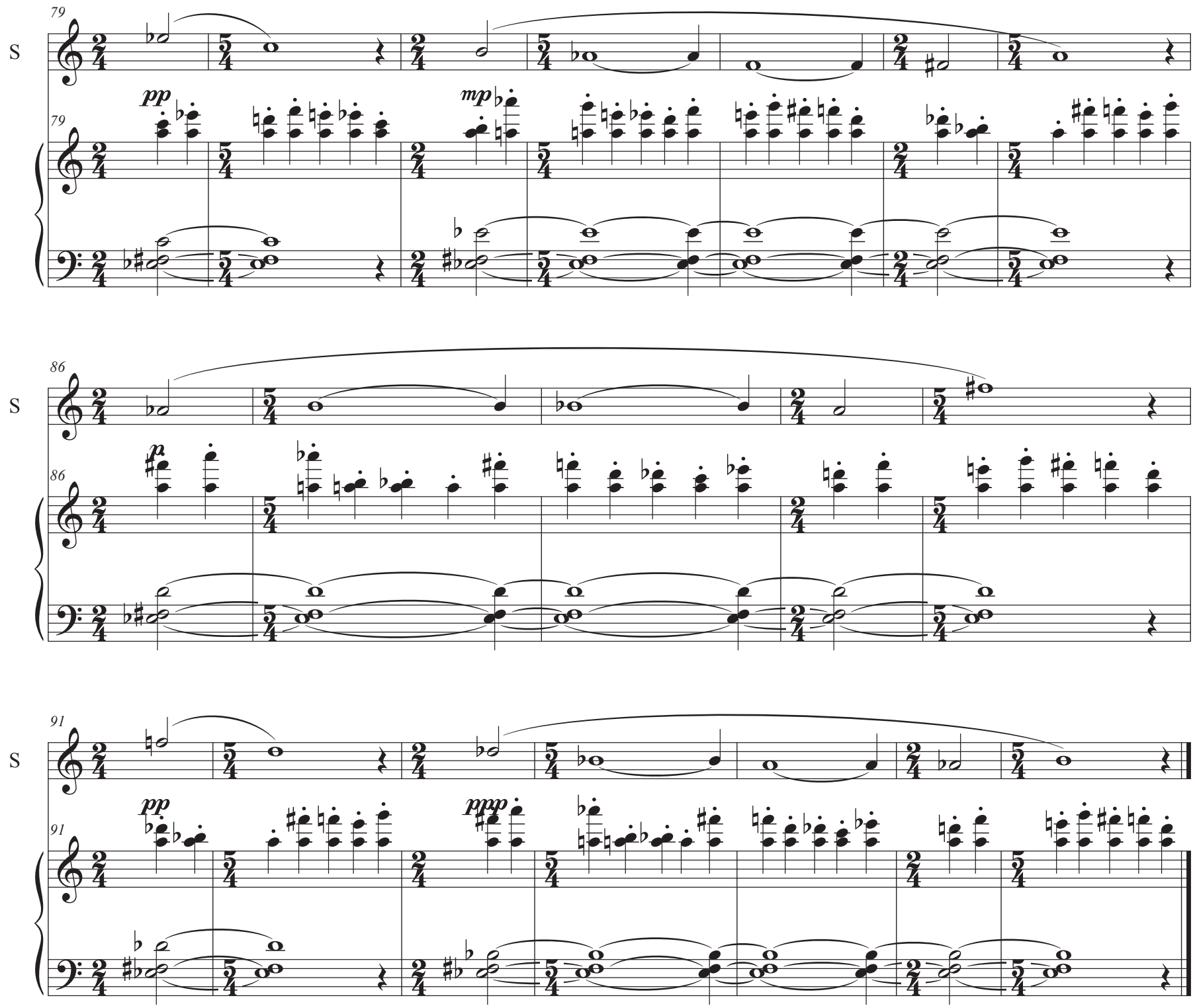

27
S
pp
p
34
S
pp
mp
41
S
p
46
S
pp
p


53
S
pp
mp
60
S
p
65
S
pp
p
72
S
pp
p

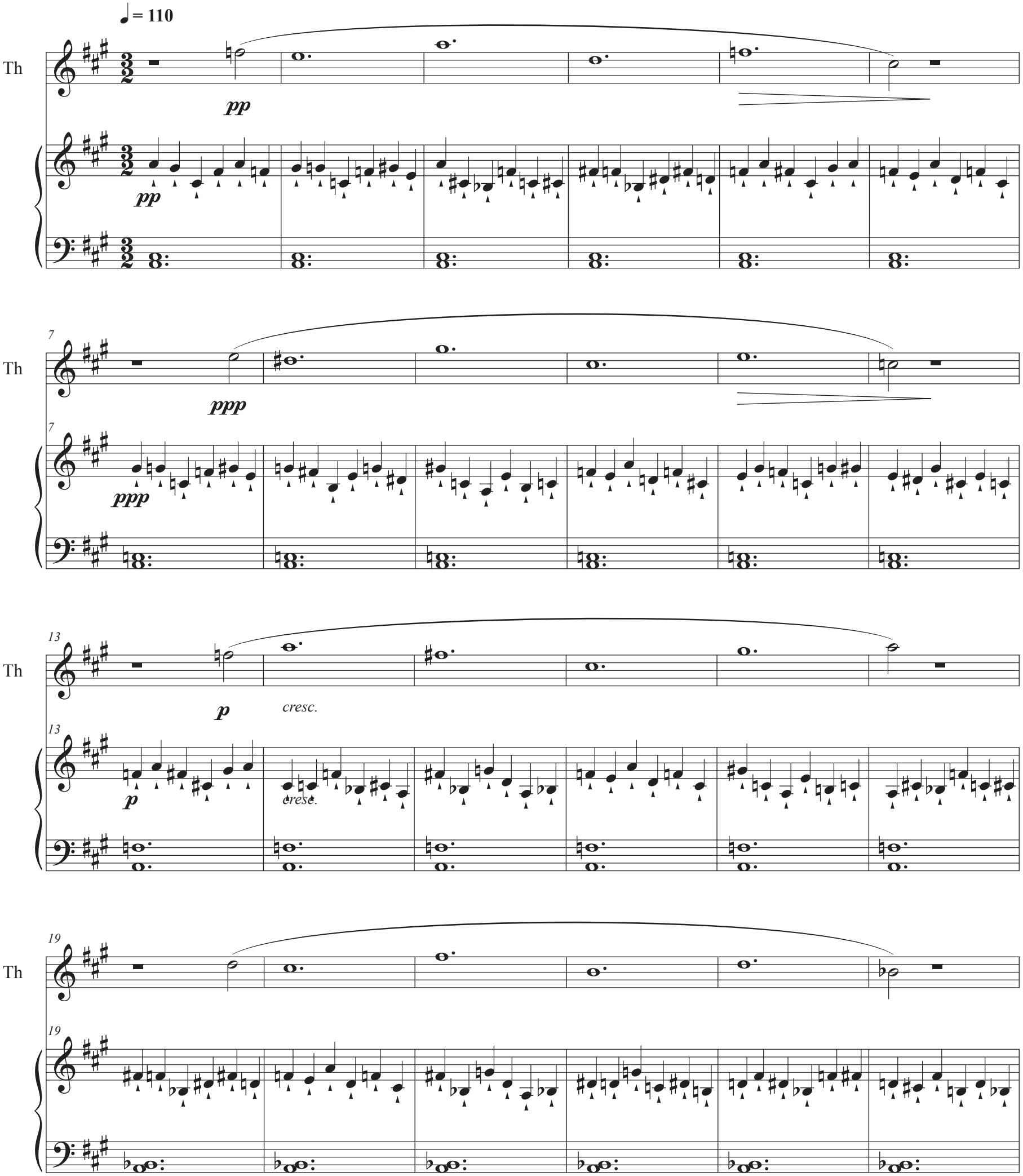

79
S
pp
mp
86
S
p
91
S
pp
ppp

Score

L-System

16. April 24, 2022

Steven Schwarz



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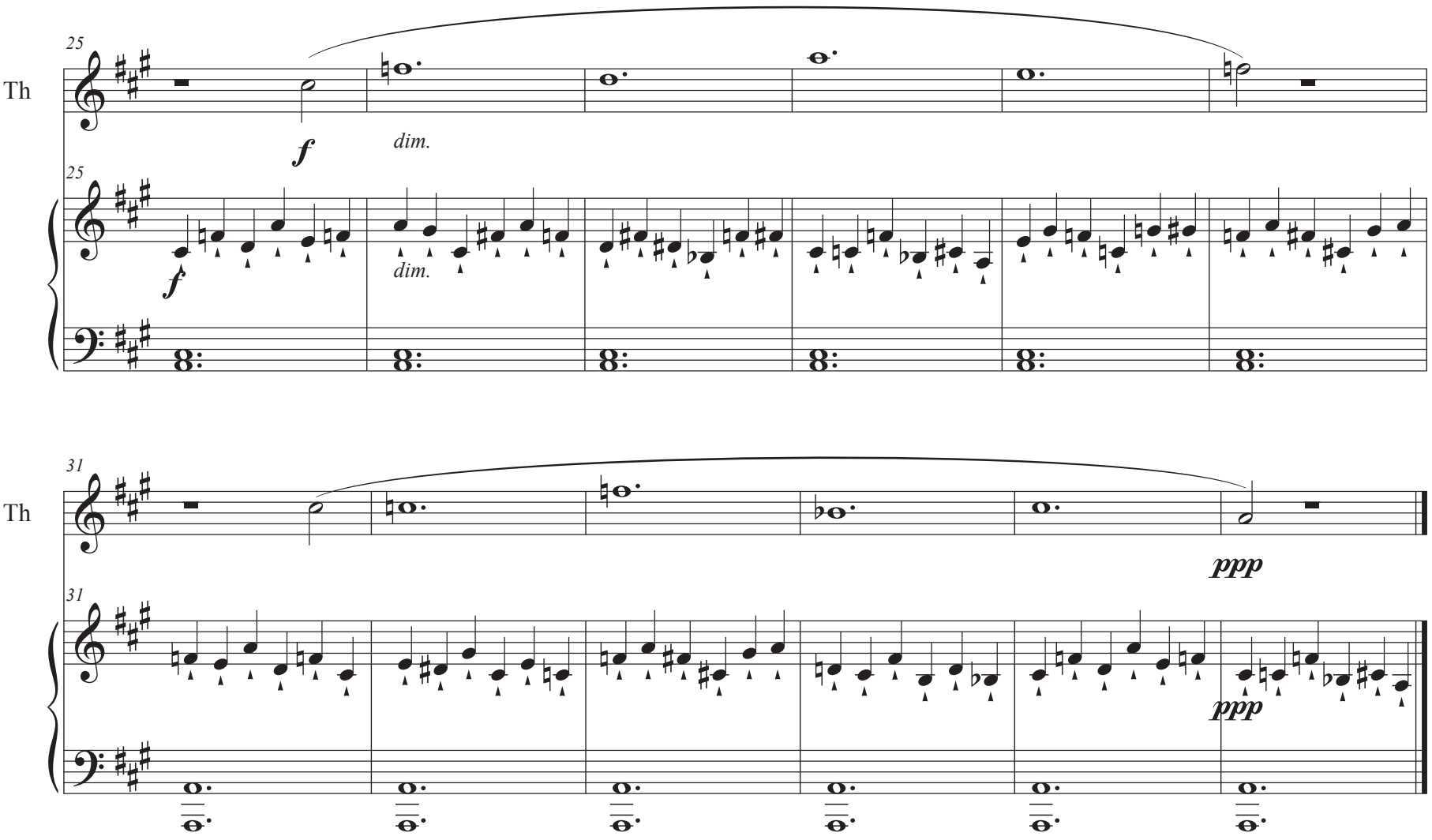
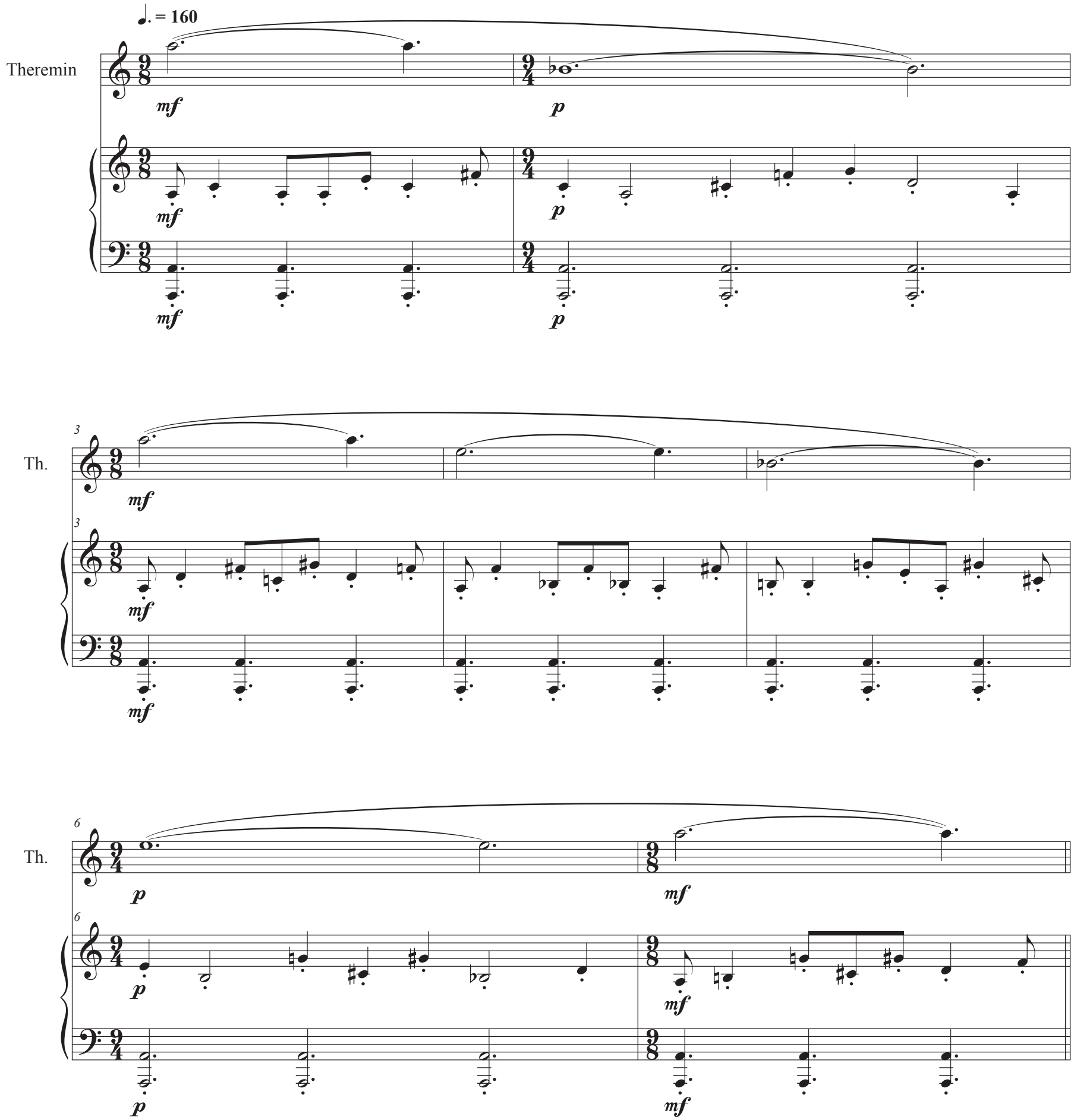

25
Th
f
dim.
25
f
dim.
31
Th
ppp
31
ppp

Score

Strange Attractor

8. September 23, 2022

Steven Schwarz



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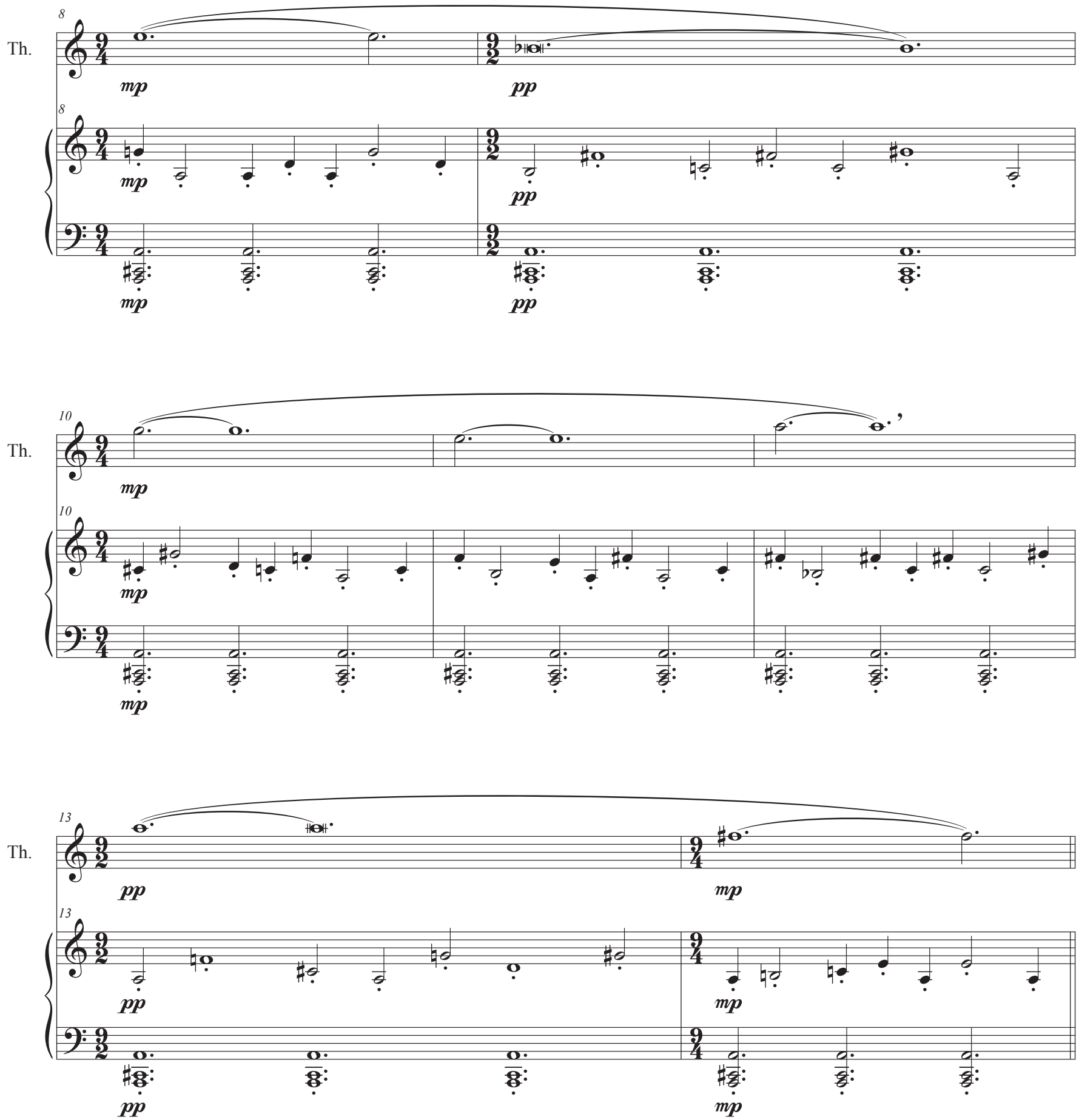
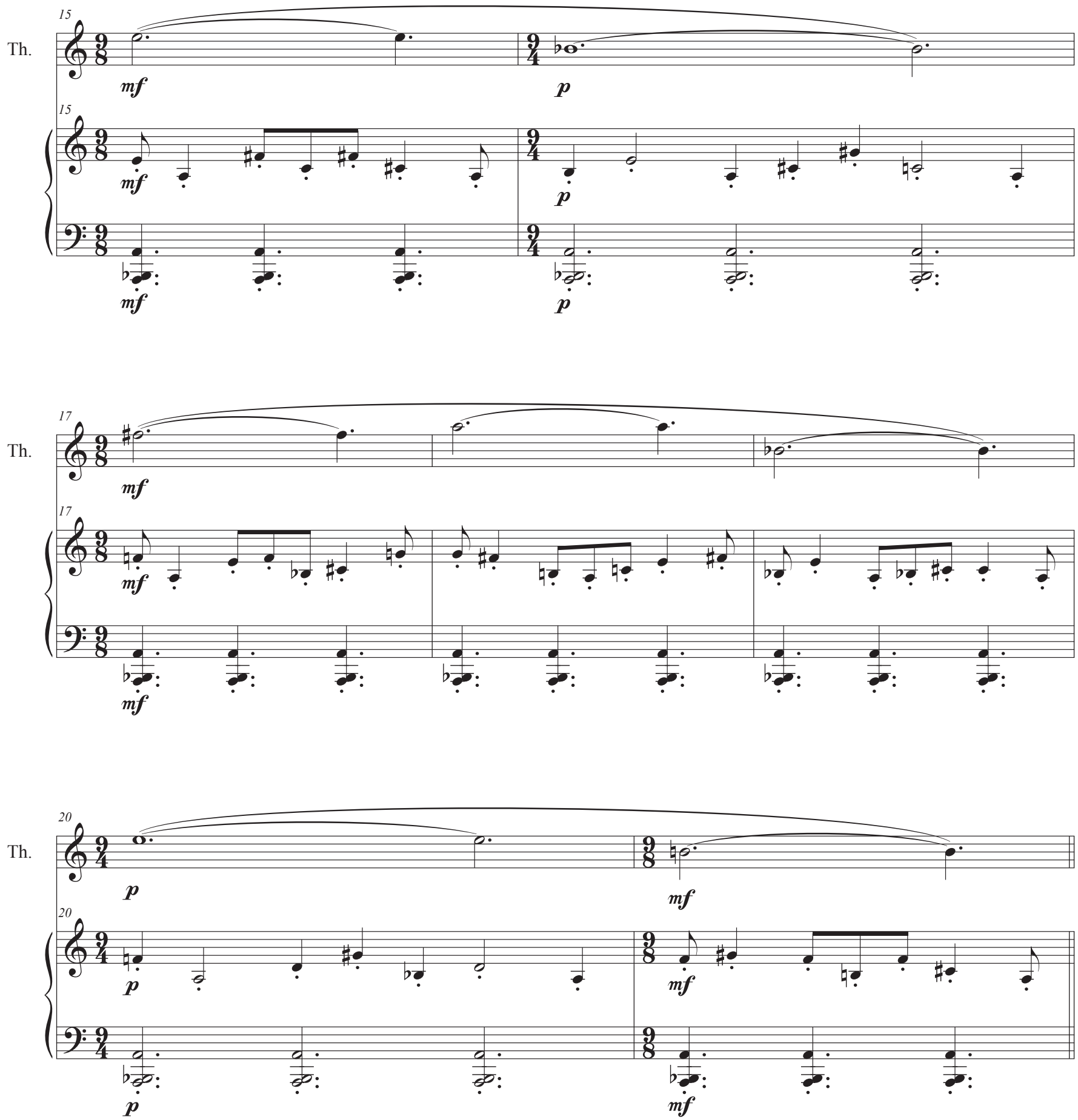
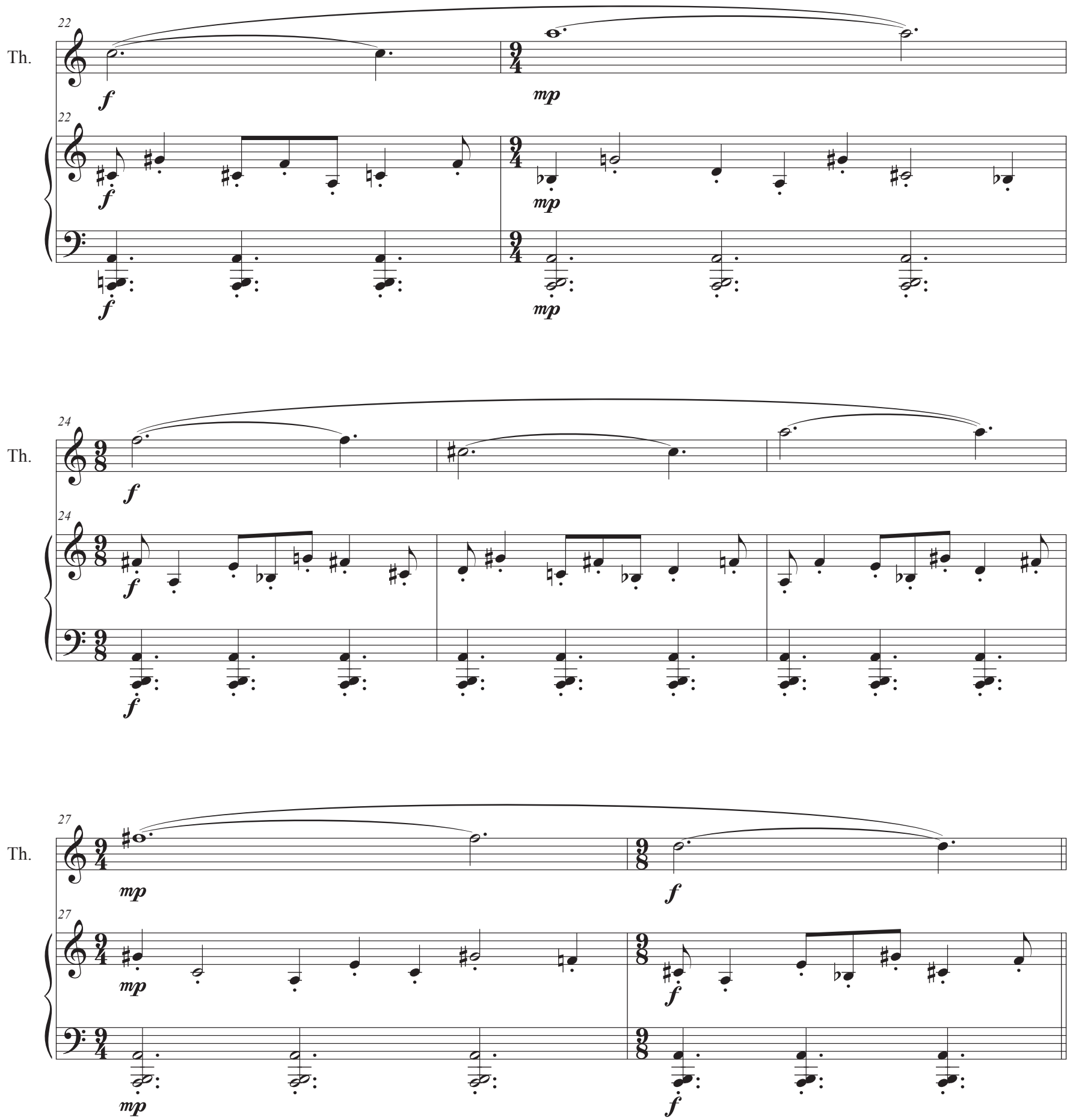
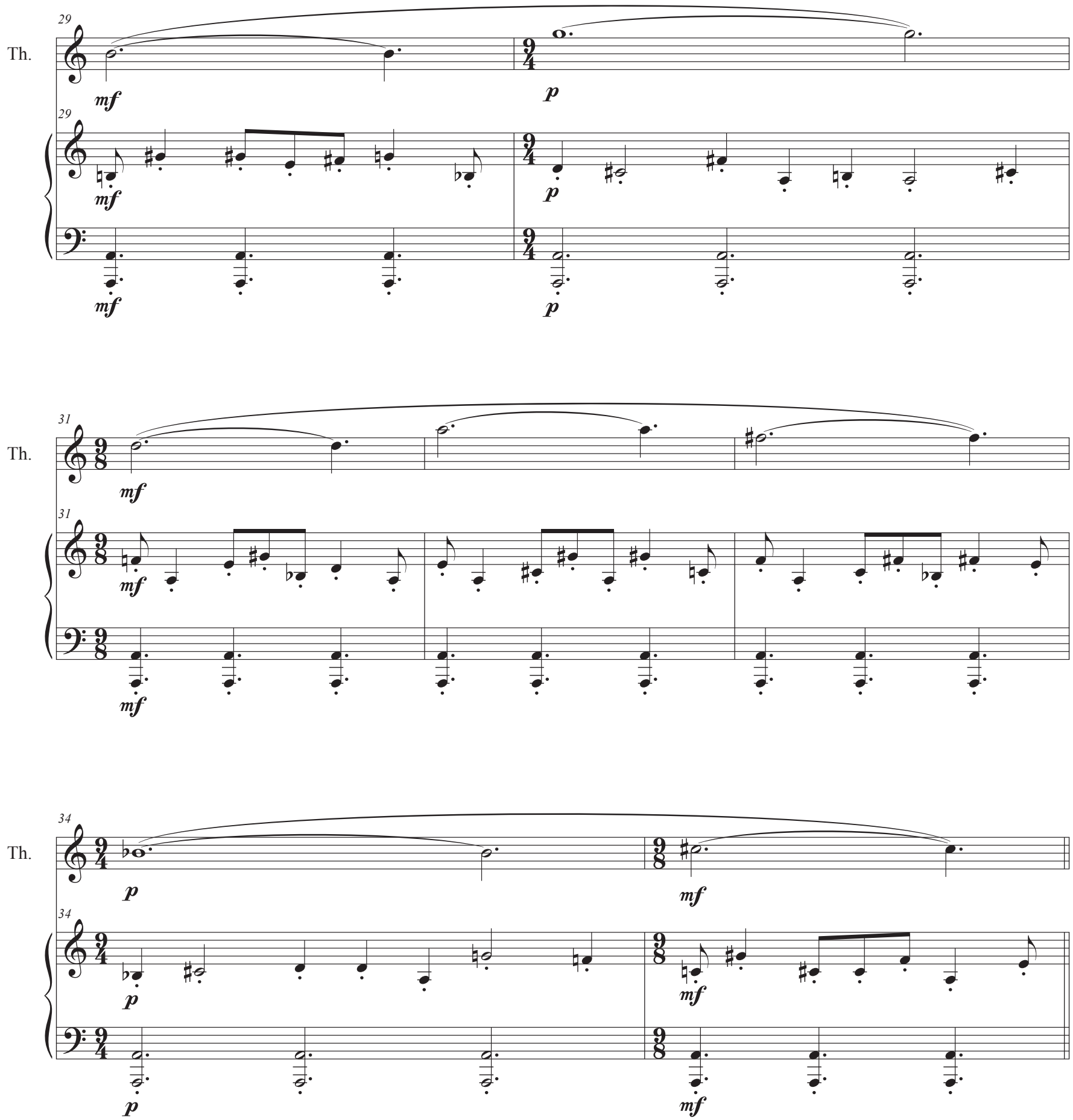
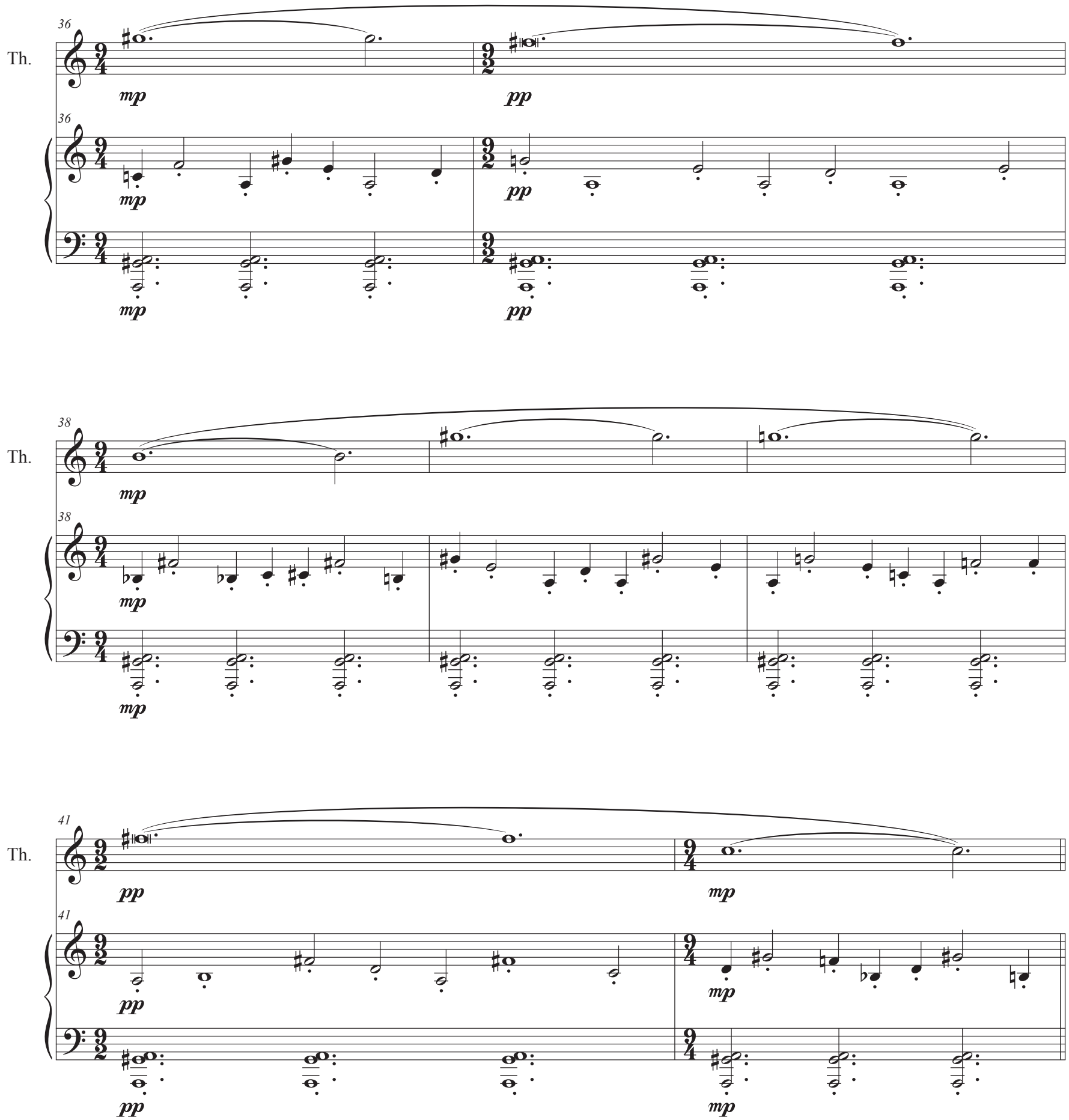
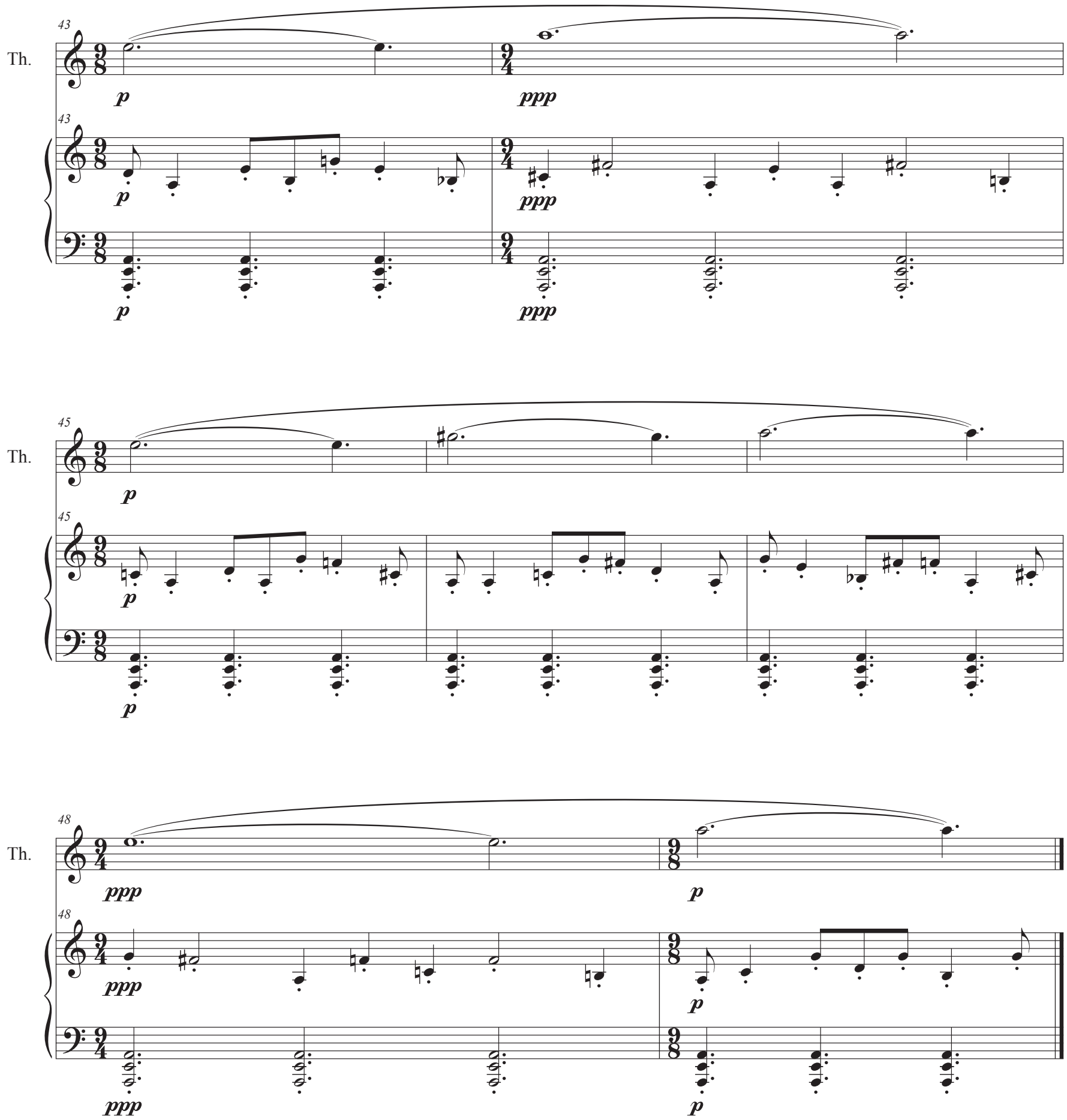

8
Th.
mp
pp
8
mp
pp
mp
pp
10
Th.
mp
10
mp
mp
13
Th.
pp
mp
13
pp
mp
pp
mp


15
Th.
mf
p
15
mf
p
mf
p
17
Th.
mf
17
mf
mf
20
Th.
p
mf
20
p
mf
p
mf


22
Th.
f
mp
22
f
mp
f
mp
24
Th.
f
24
f
f
27
Th.
mp
f
27
mp
f
mp
f


29
Th.
mf
p
29
mf
p
mf
p
31
Th.
mf
31
mf
mf
34
Th.
p
mf
34
p
mf
p
mf


36
Th.
mp
pp
36
mp
pp
mp
pp
38
Th.
mp
38
mp
mp
41
Th.
pp
mp
41
pp
mp
pp
mp

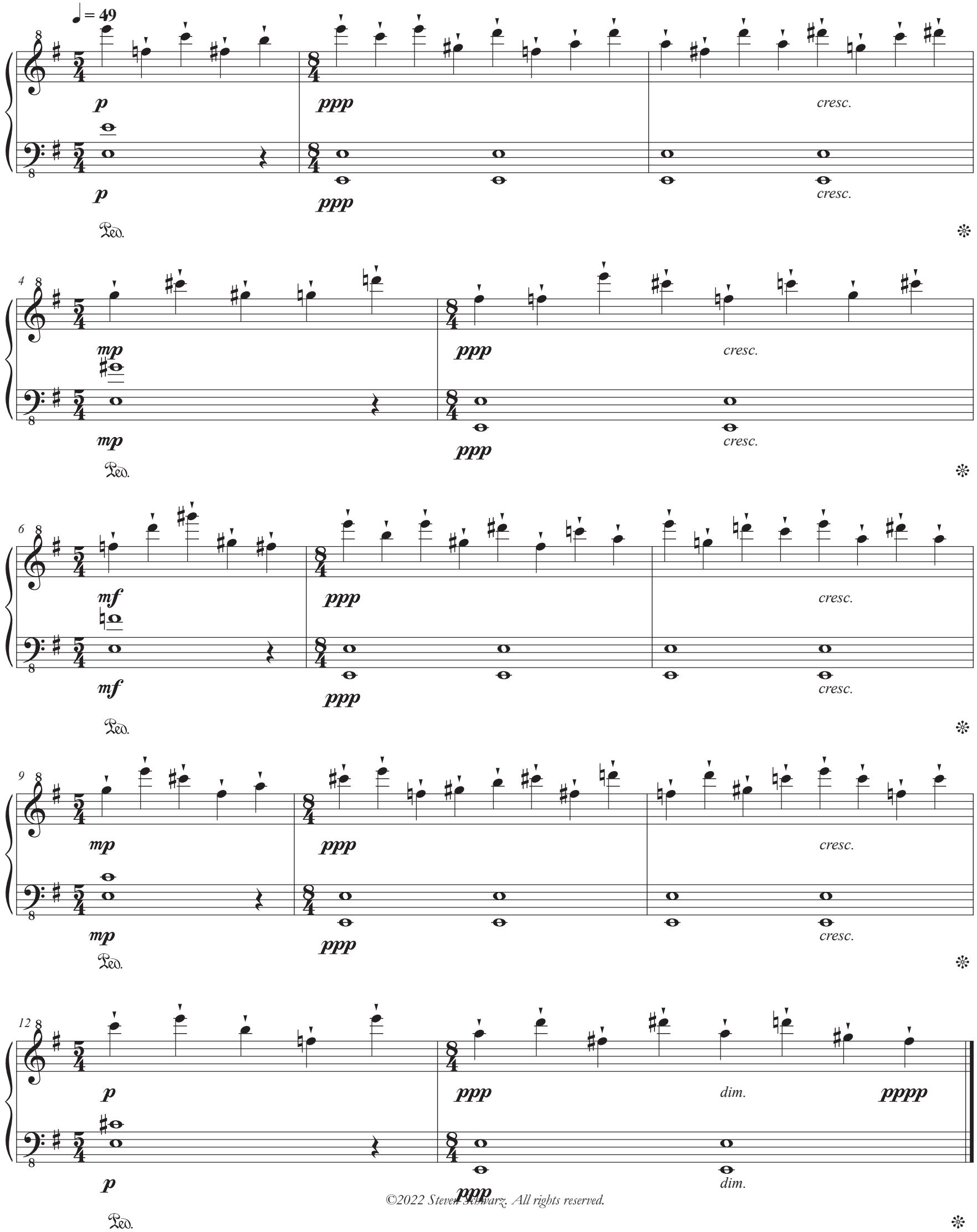

43
Th.
p
ppp
43
p
ppp
p
ppp
45
Th.
p
45
p
p
48
Th.
ppp
p
48
ppp
p
ppp
p

Score

Strange Attractor

15. October 4, 2022

Steven Schwarz



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Strange Attractor

16. October 6, 2022

Steven Schwarz

♩ = 512

Celesta

ppp

Violin

pizz.

ppp

Viola

pizz.

ppp

Cello

pizz.

ppp

Bass

pizz.

ppp

9

Cel.

pp

Vln.

pp

Vla.

pp

Vc.

pp

B.

pp

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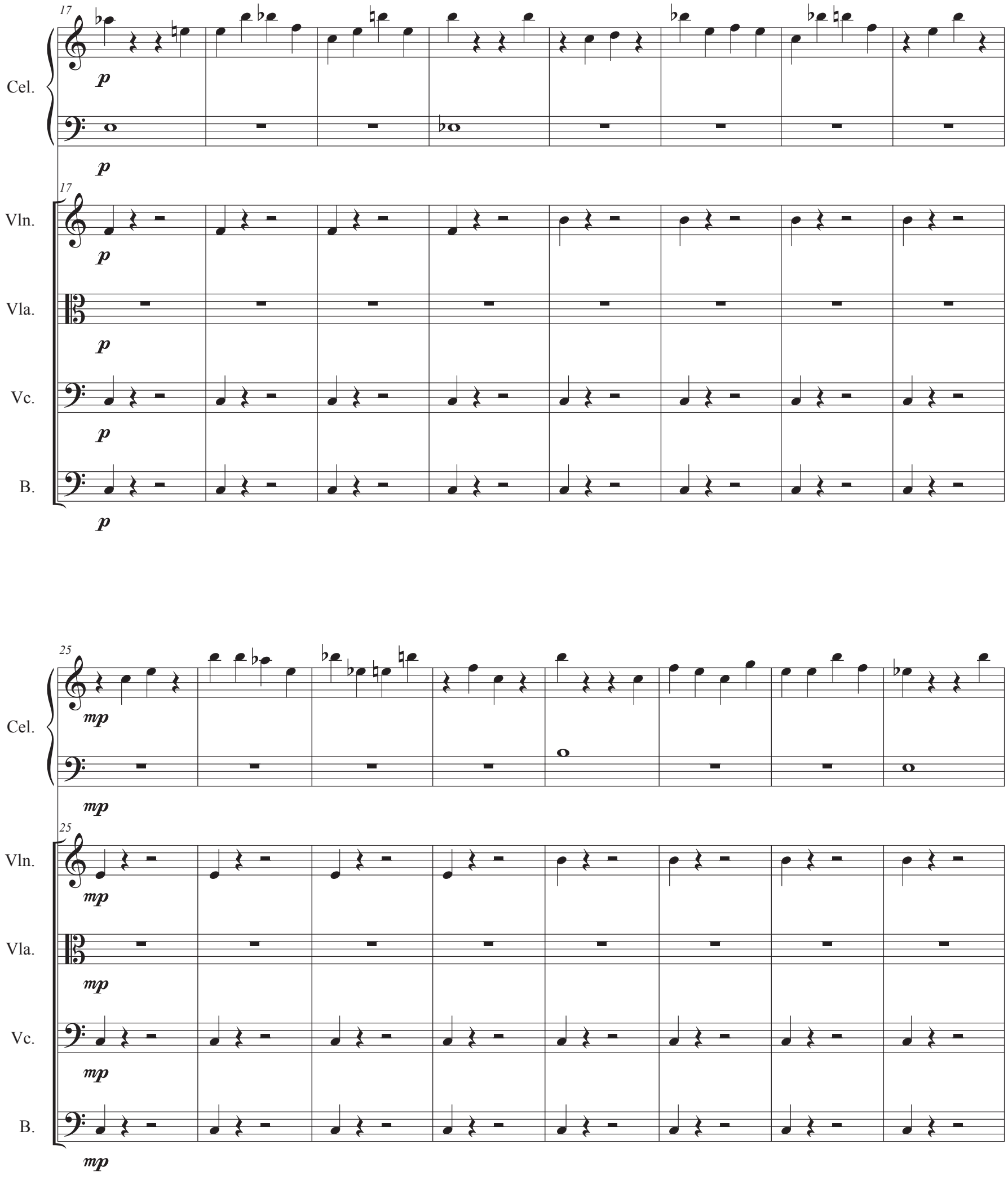
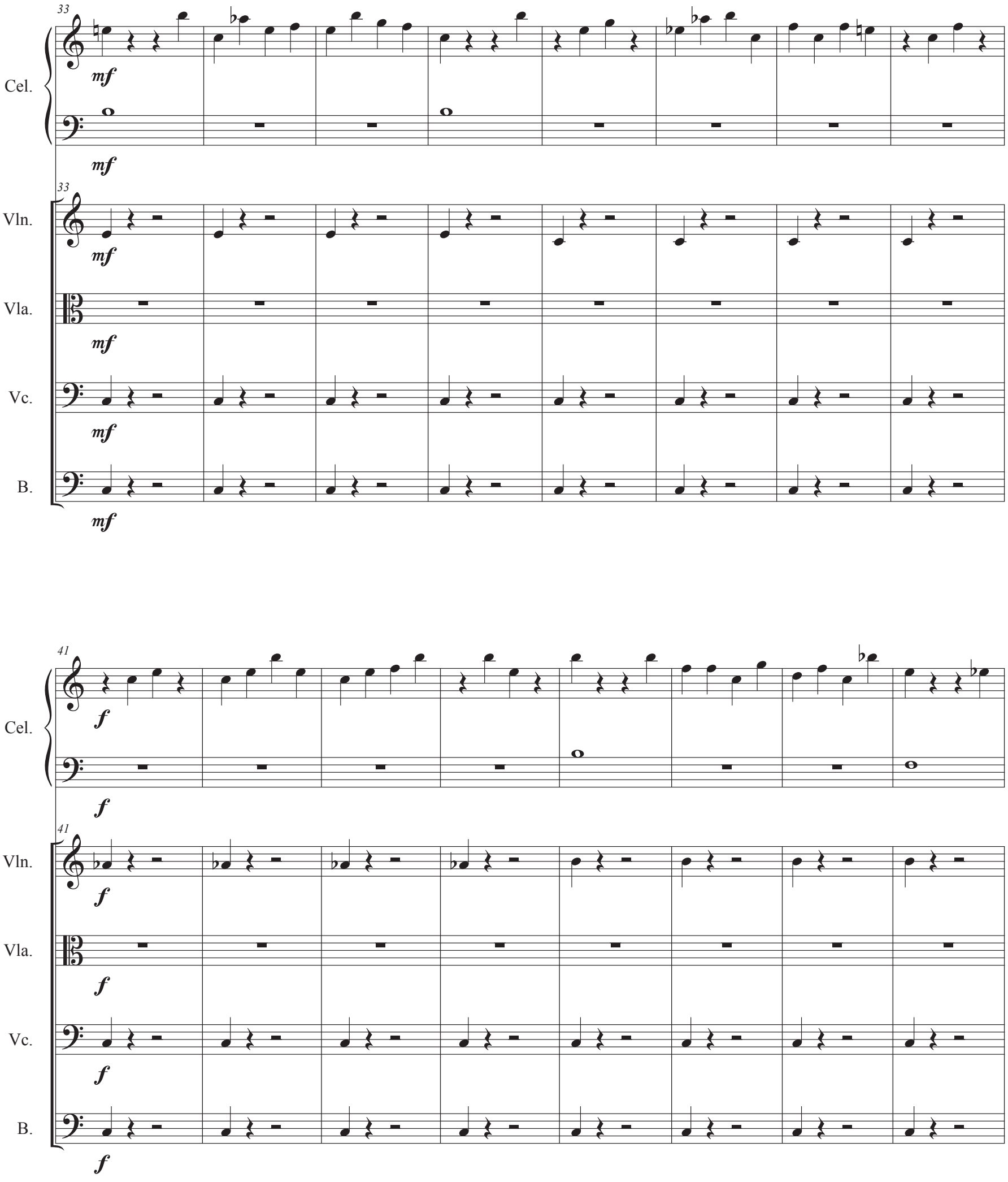
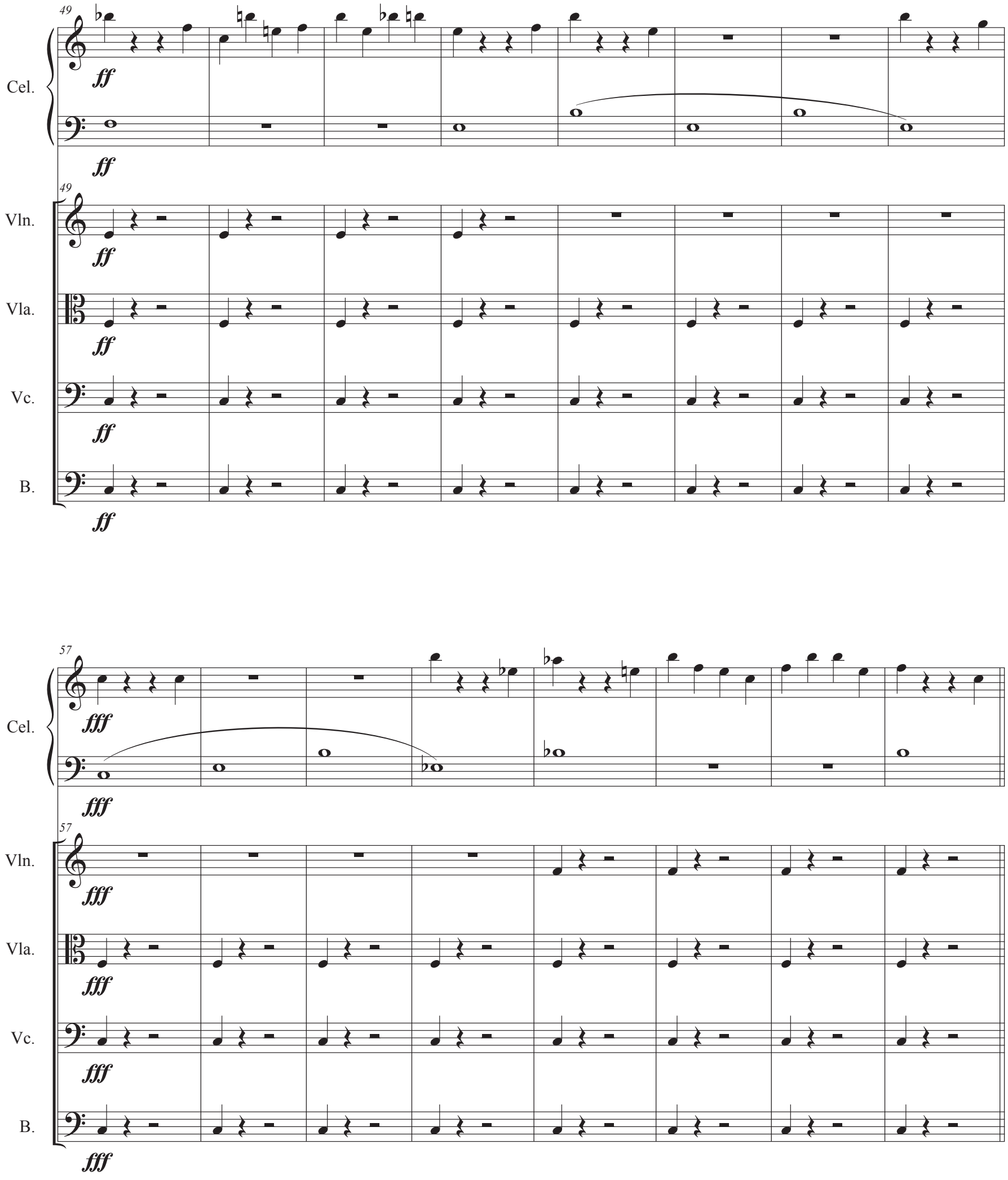
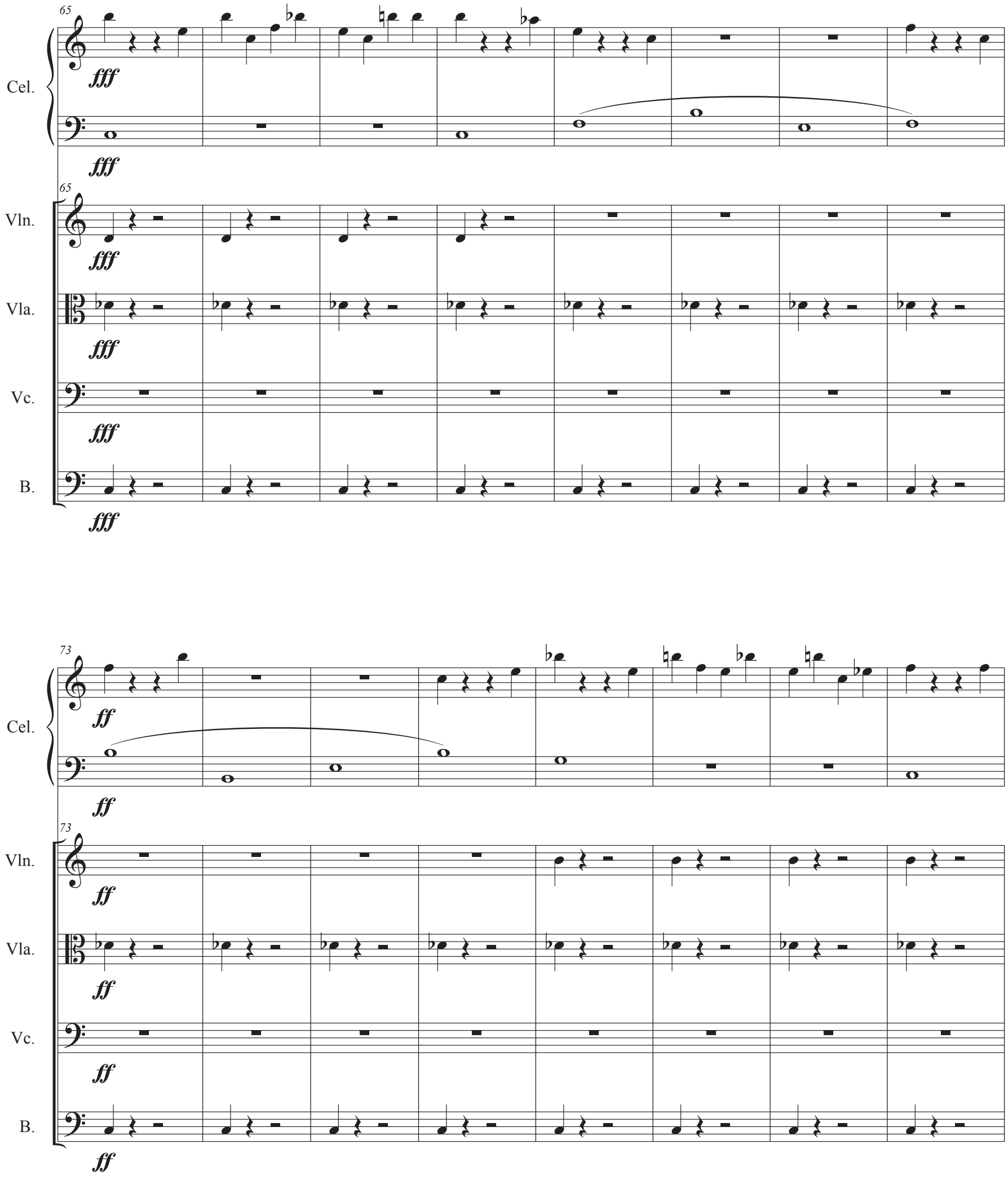
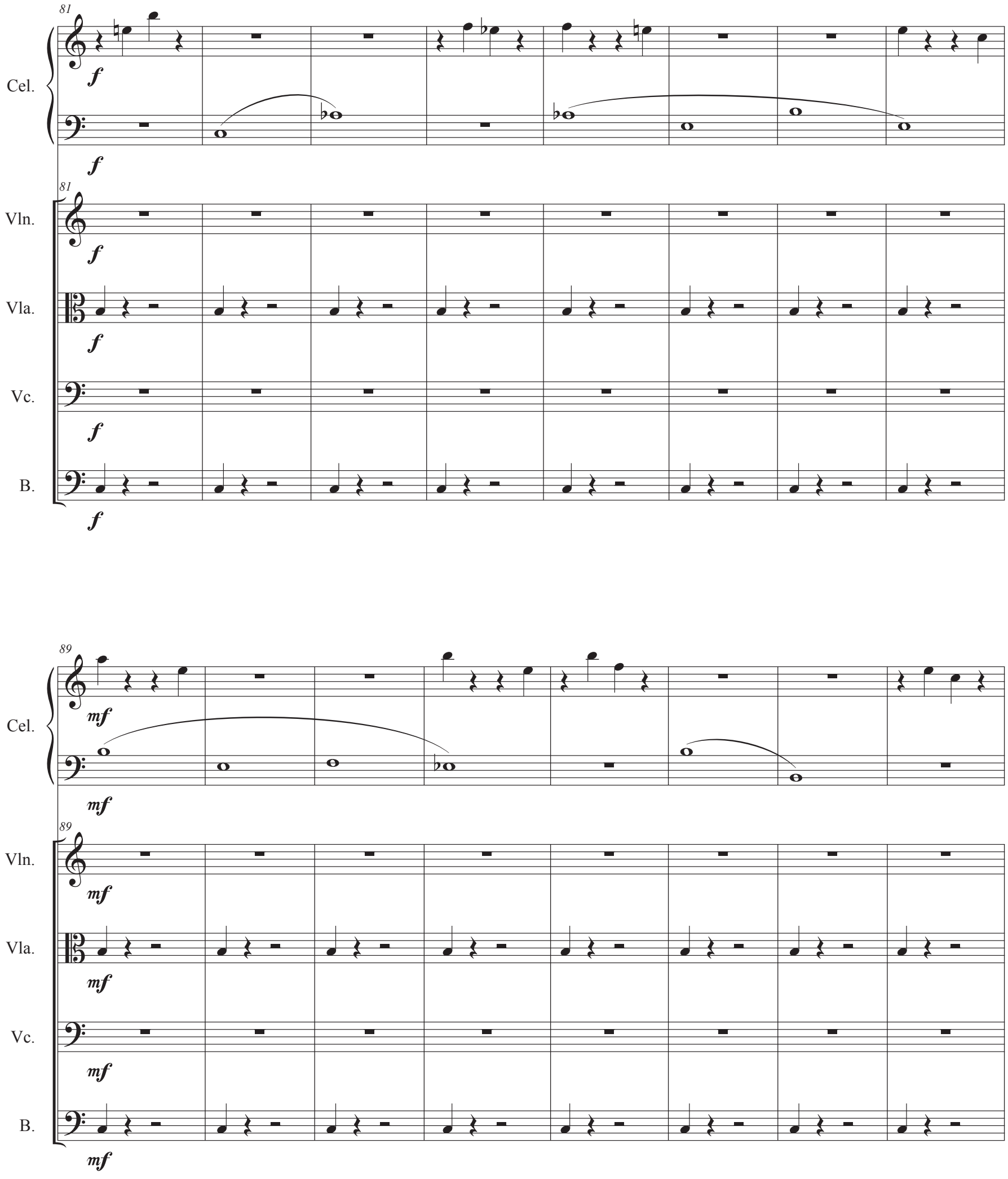
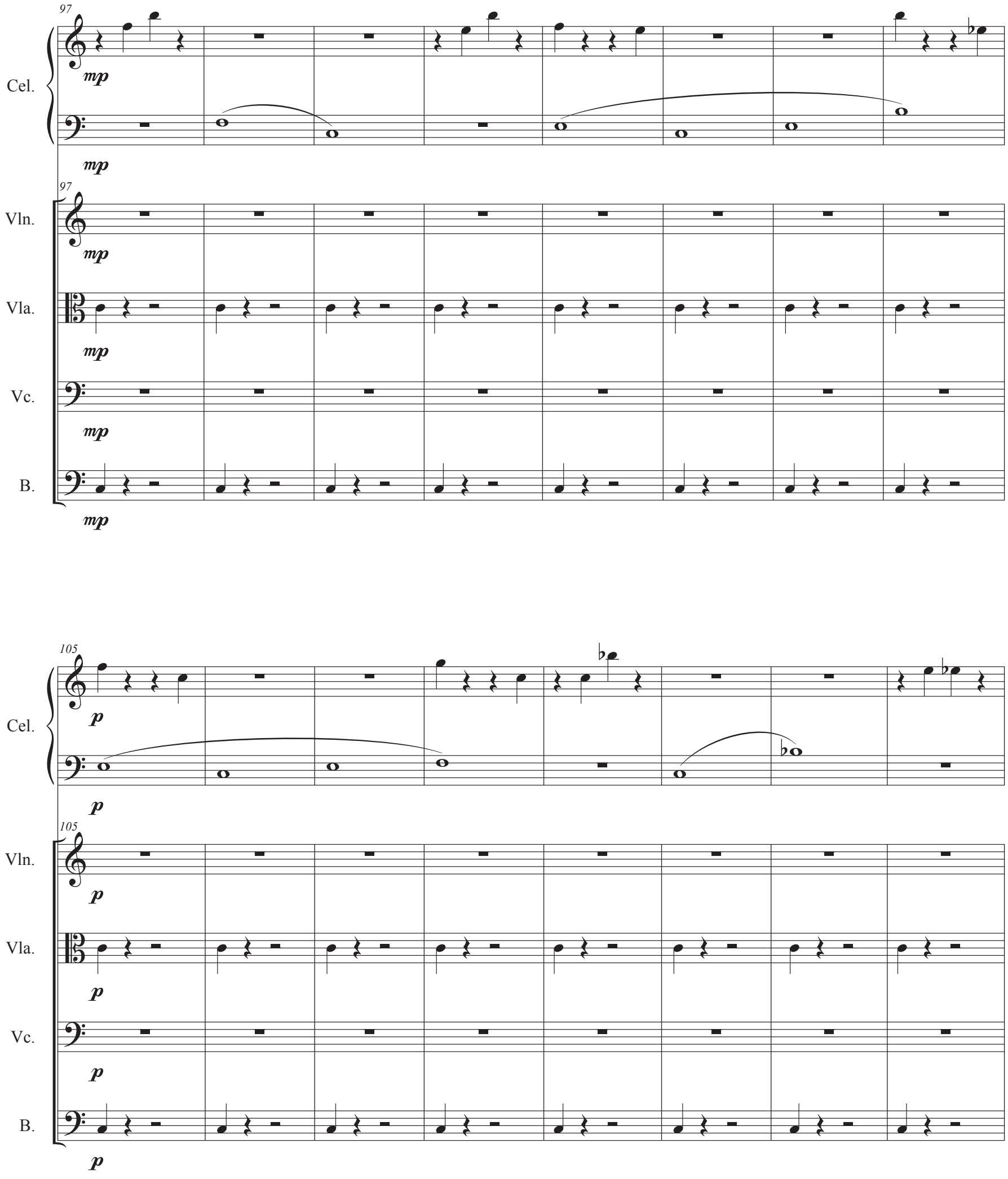

17
Cel.
p
p
17
Vln.
p
Vla.
p
Vc.
p
B.
p
25
Cel.
mp
mp
25
Vln.
mp
Vla.
mp
Vc.
mp
B.
mp

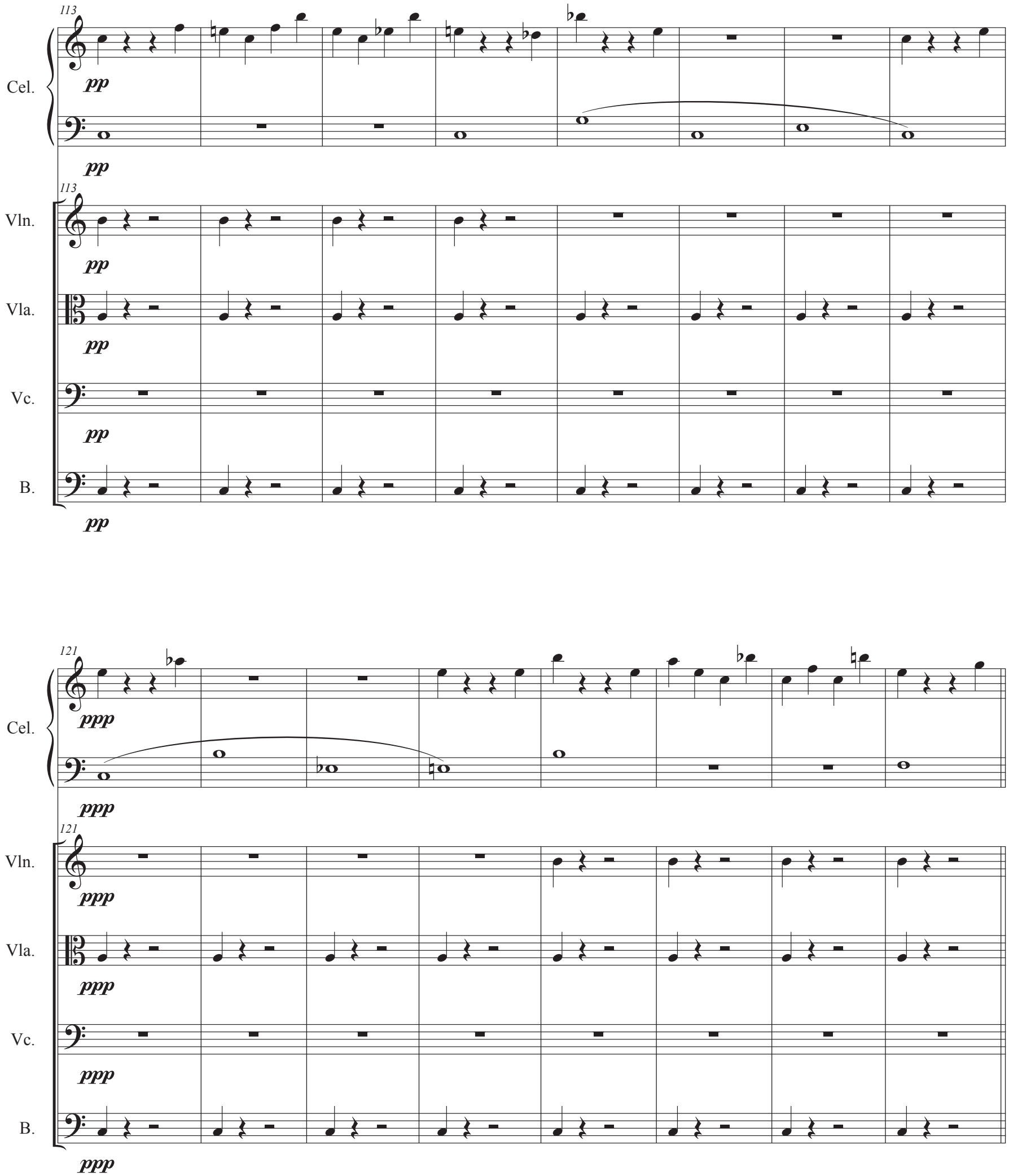

33
Cel.
mf
mf
33
Vln.
mf
Vla.
mf
Vc.
mf
B.
mf
41
Cel.
f
f
41
Vln.
f
Vla.
f
Vc.
f
B.
f

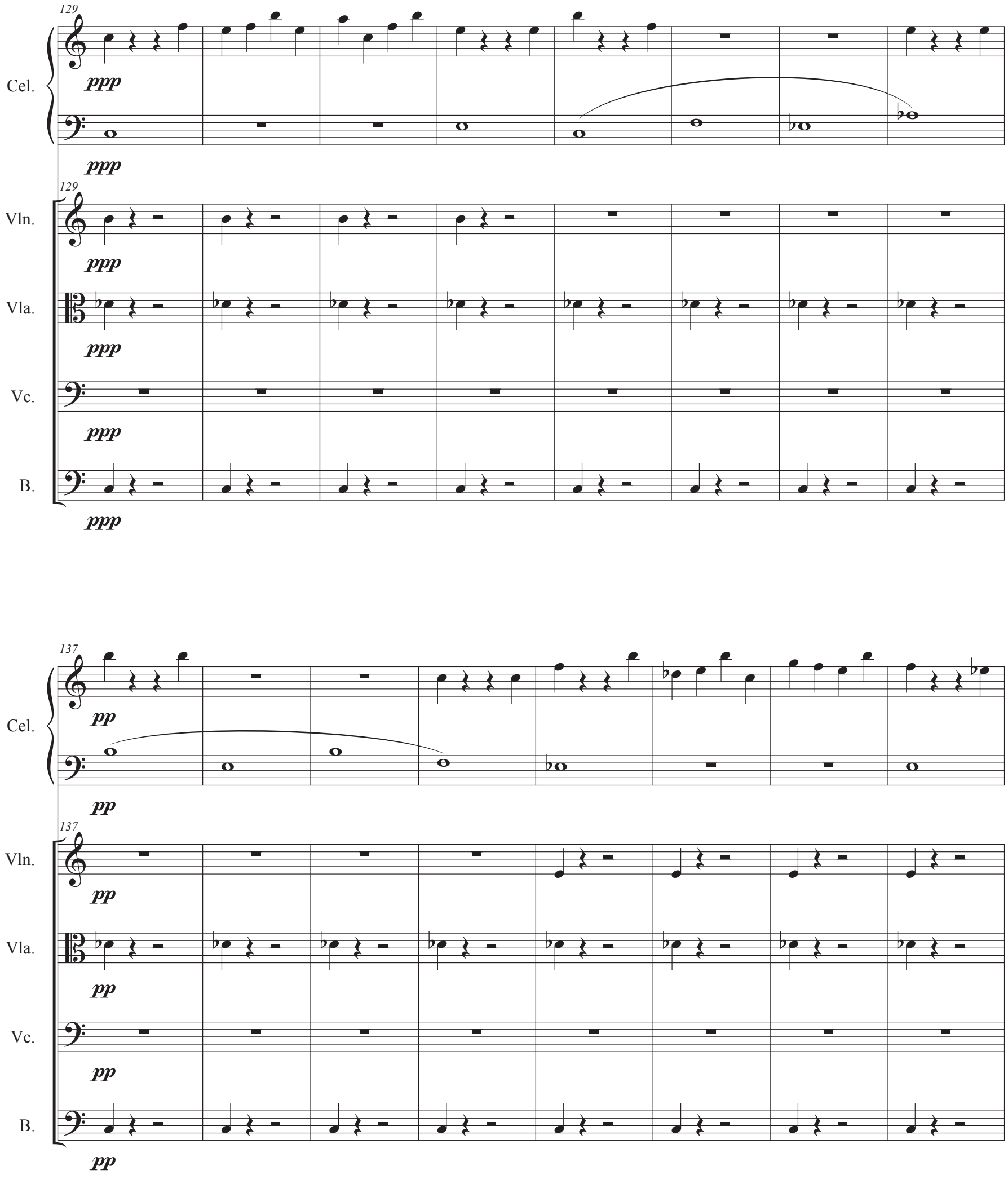

49
Cel.
ff
ff
49
Vln.
ff
Vla.
ff
Vc.
ff
B.
ff
57
Cel.
fff
fff
57
Vln.
fff
Vla.
fff
Vc.
fff
B.
fff

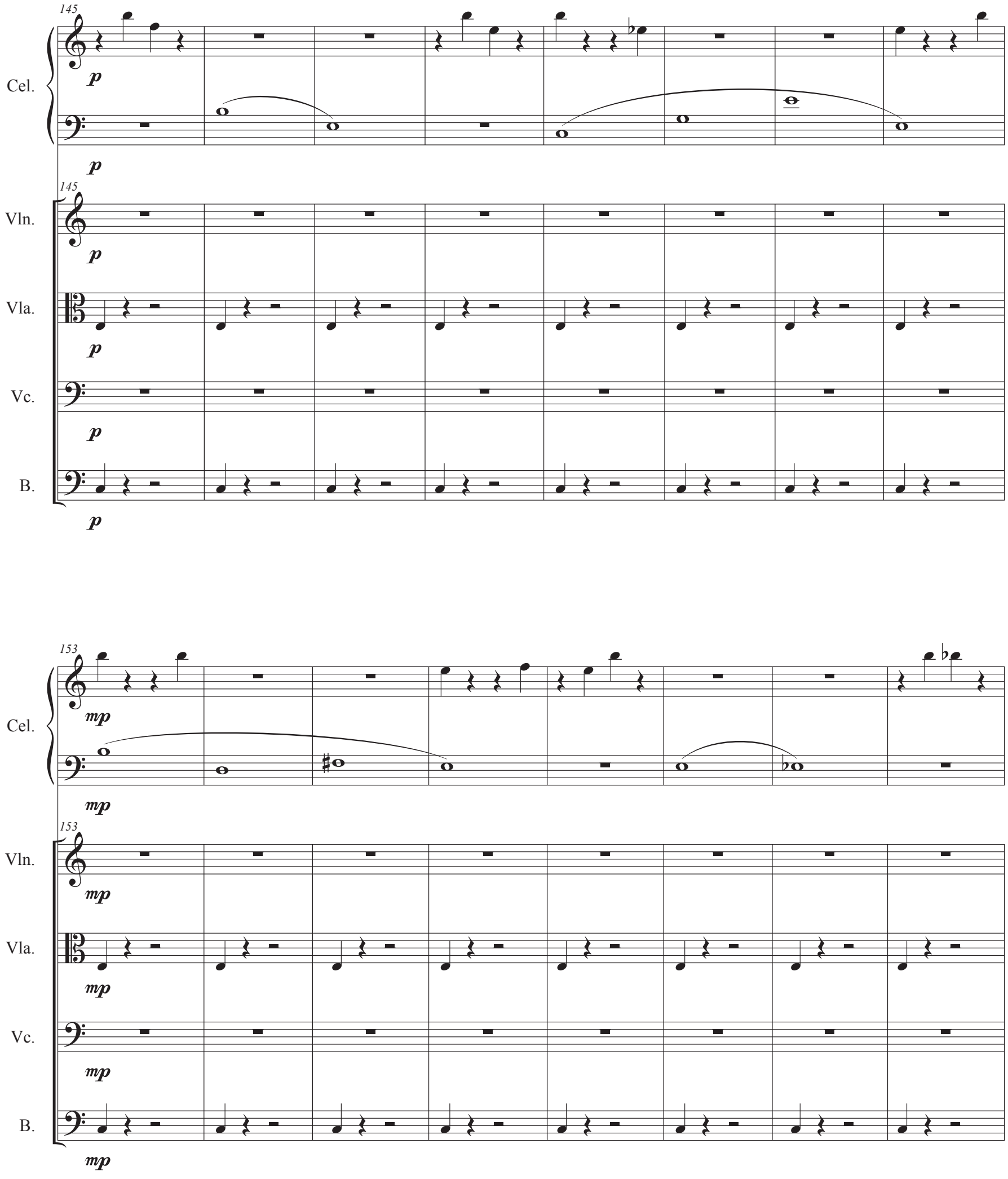

65
Cel.
fff
fff
65
Vln.
fff
Vla.
fff
Vc.
fff
B.
fff
73
Cel.
ff
ff
73
Vln.
ff
Vla.
ff
Vc.
ff
B.
ff

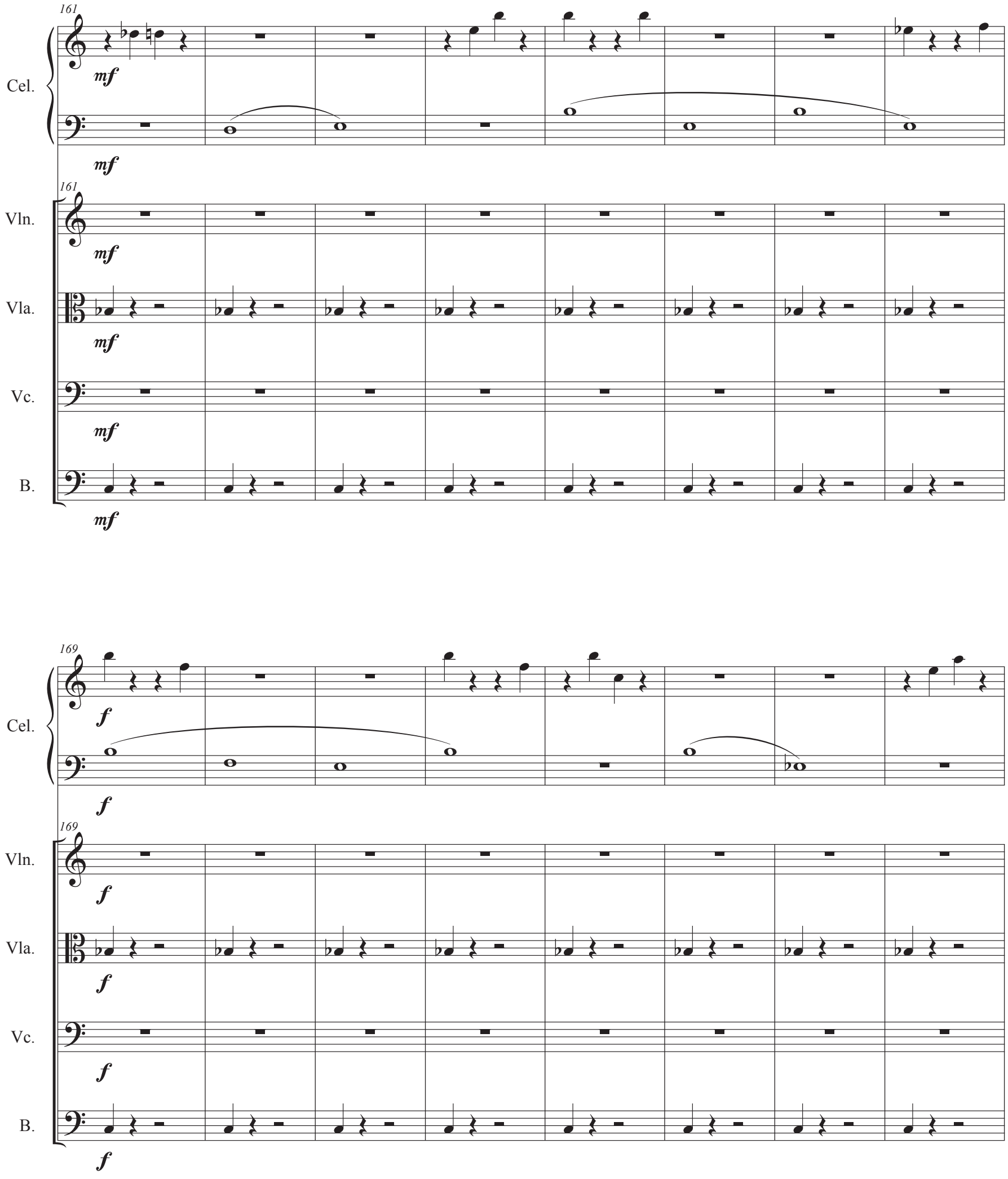

81
Cel.
f
f
81
Vln.
f
Vla.
f
Vc.
f
B.
f
89
Cel.
mf
mf
89
Vln.
mf
Vla.
mf
Vc.
mf
B.
mf

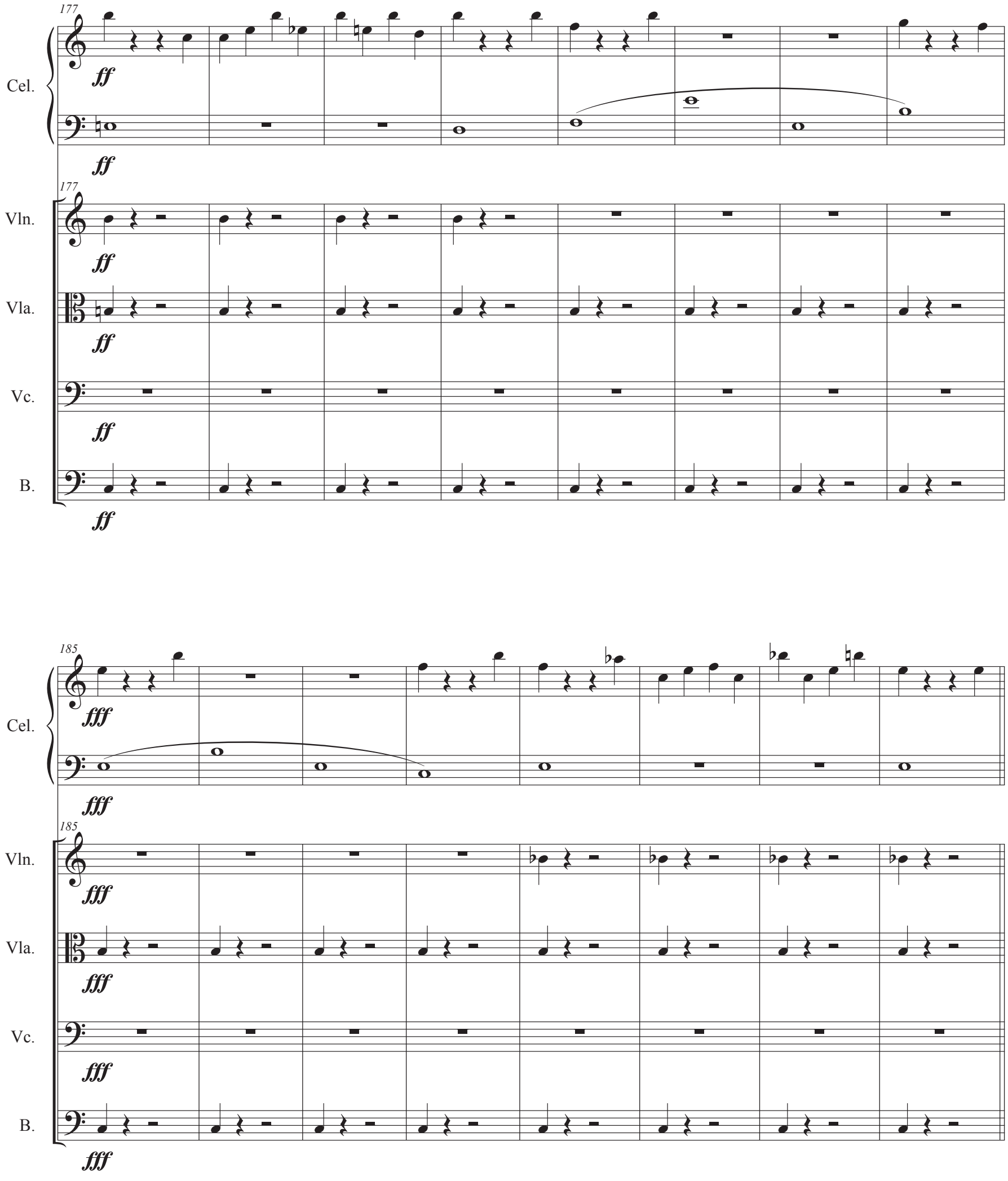

97
Cel.
mp
mp
97
Vln.
mp
Vla.
mp
Vc.
mp
B.
mp
105
Cel.
p
p
105
Vln.
p
Vla.
p
Vc.
p
B.
p

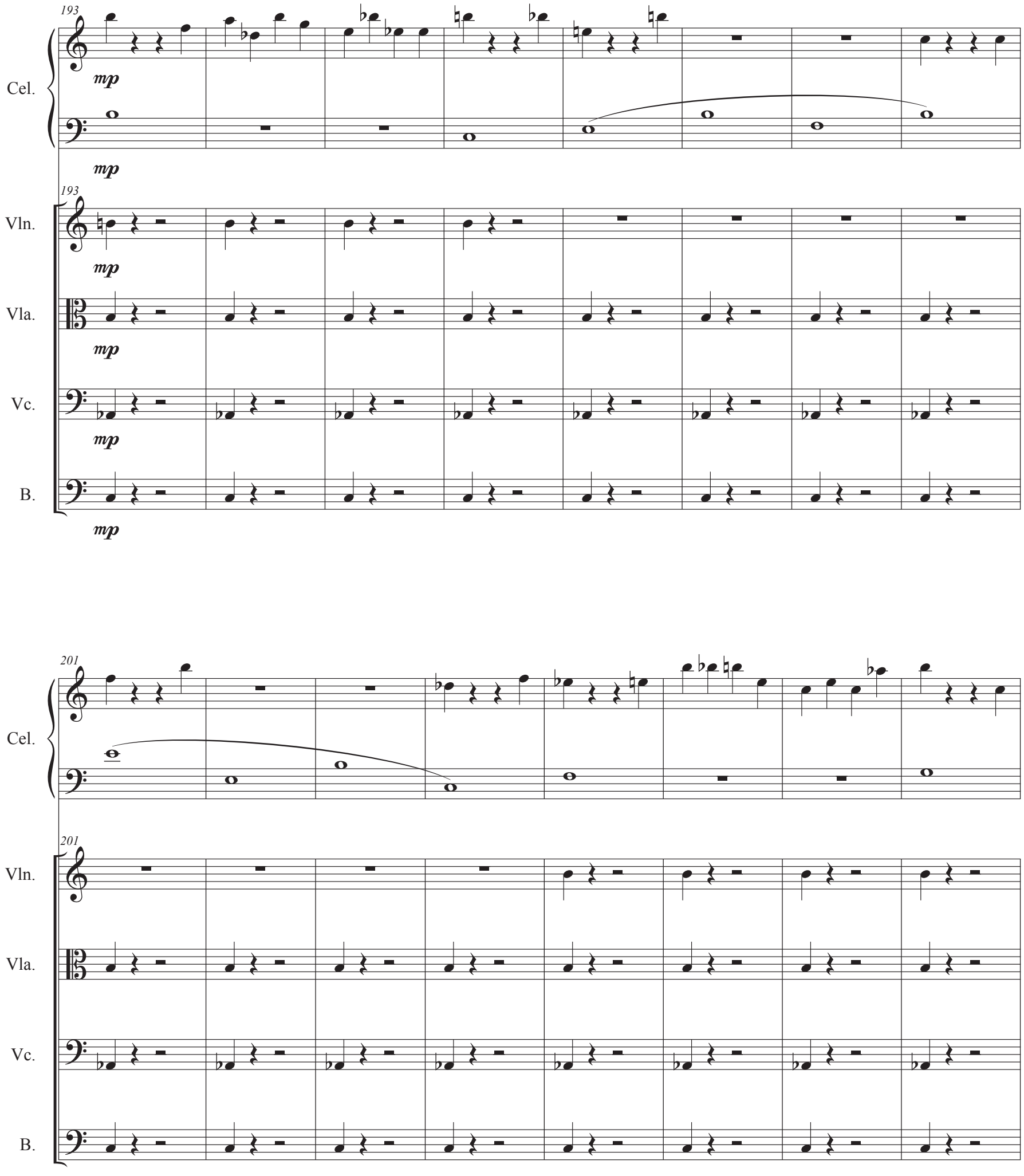

113
Cel.
pp
pp
113
Vln.
pp
Vla.
pp
Vc.
pp
B.
pp
121
Cel.
ppp
ppp
121
Vln.
ppp
Vla.
ppp
Vc.
ppp
B.
ppp

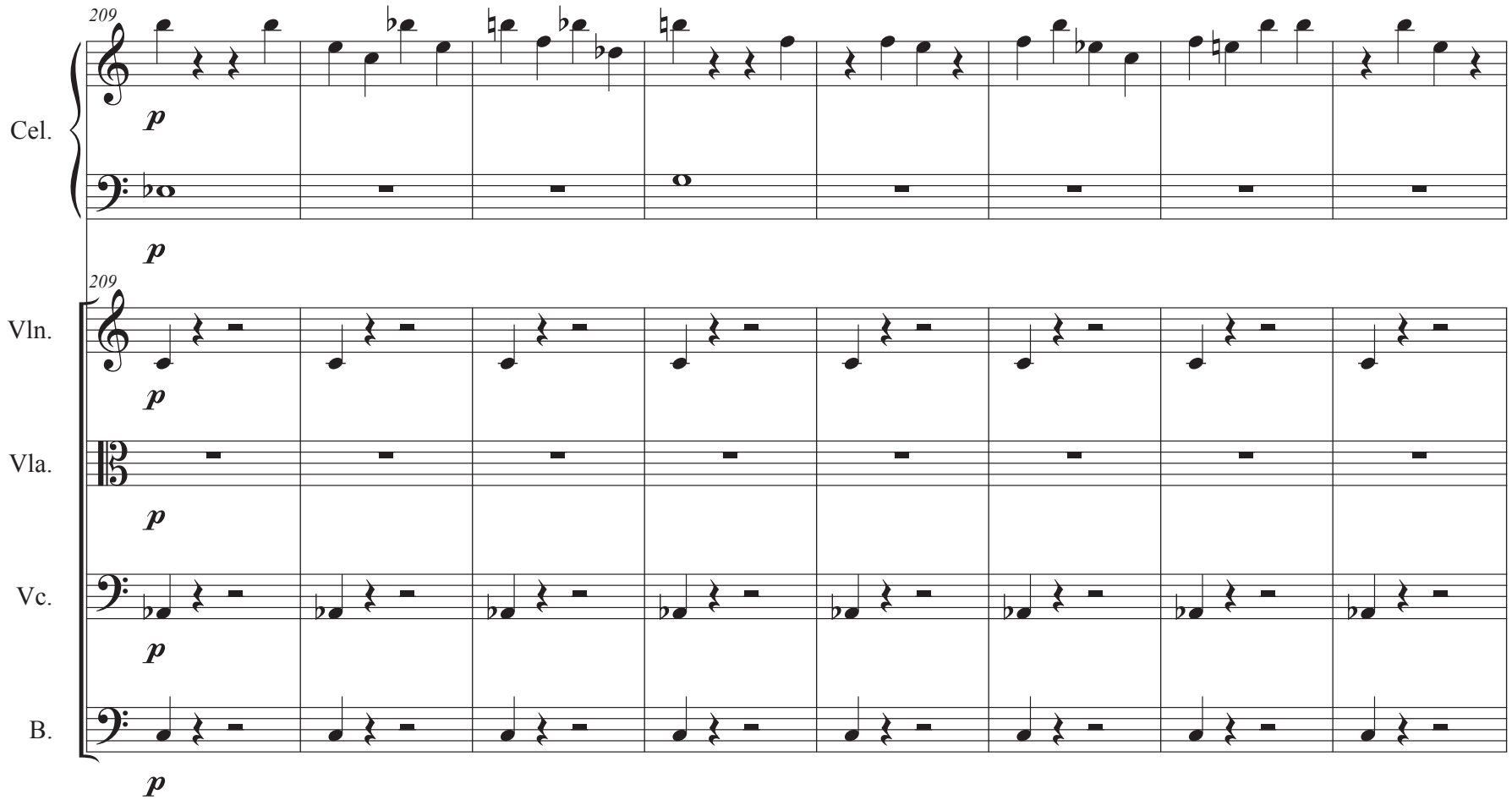

129
Cel.
ppp
ppp
129
Vln.
ppp
Vla.
ppp
Vc.
ppp
B.
ppp
137
Cel.
pp
pp
137
Vln.
pp
Vla.
pp
Vc.
pp
B.
pp

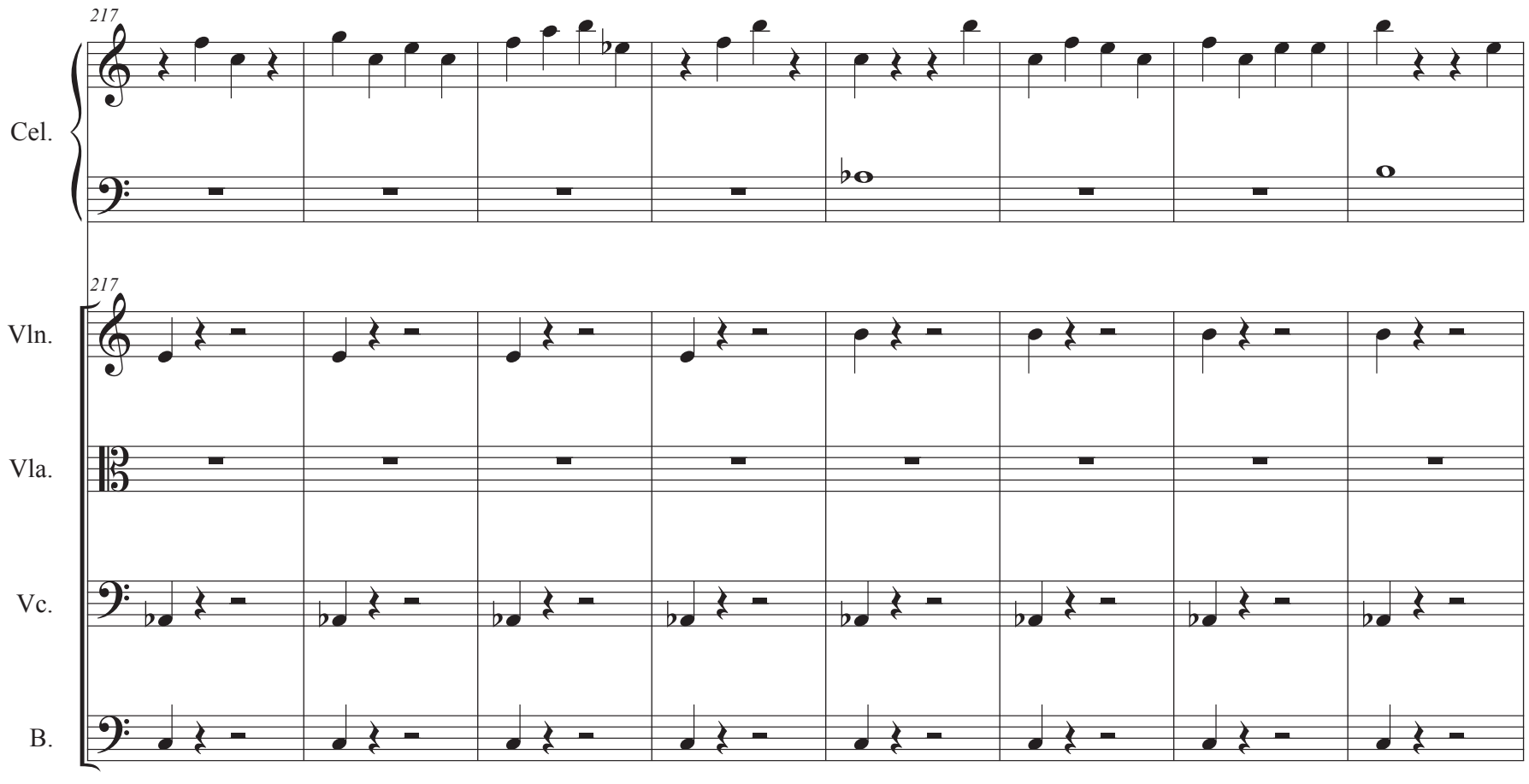

145
Cel.
p
p
145
Vln.
p
Vla.
p
Vc.
p
B.
p
153
Cel.
mp
mp
153
Vln.
mp
Vla.
mp
Vc.
mp
B.
mp

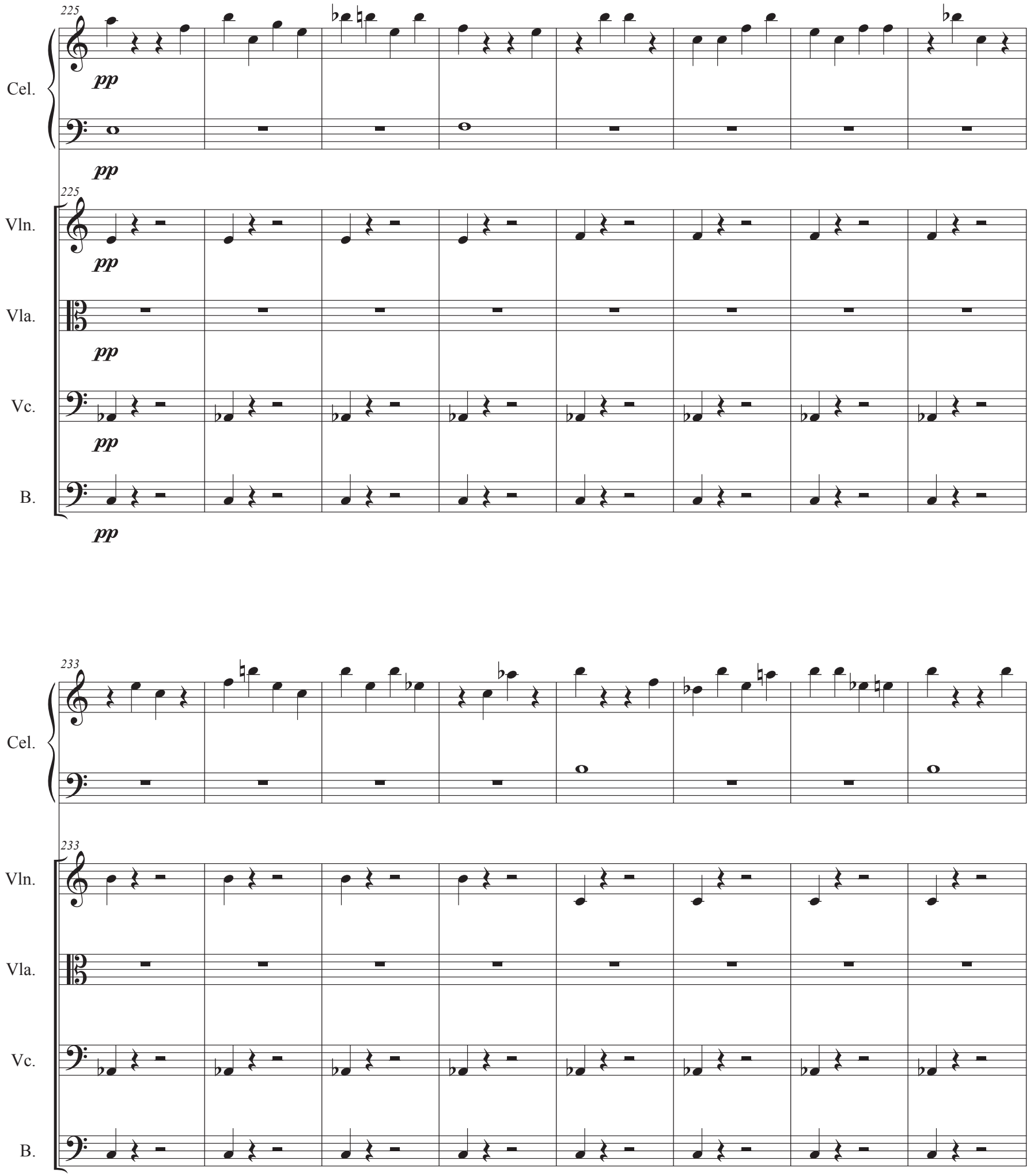

161
Cel.
mf
mf
161
Vln.
mf
Vla.
mf
Vc.
mf
B.
mf
169
Cel.
f
f
169
Vln.
f
Vla.
f
Vc.
f
B.
f

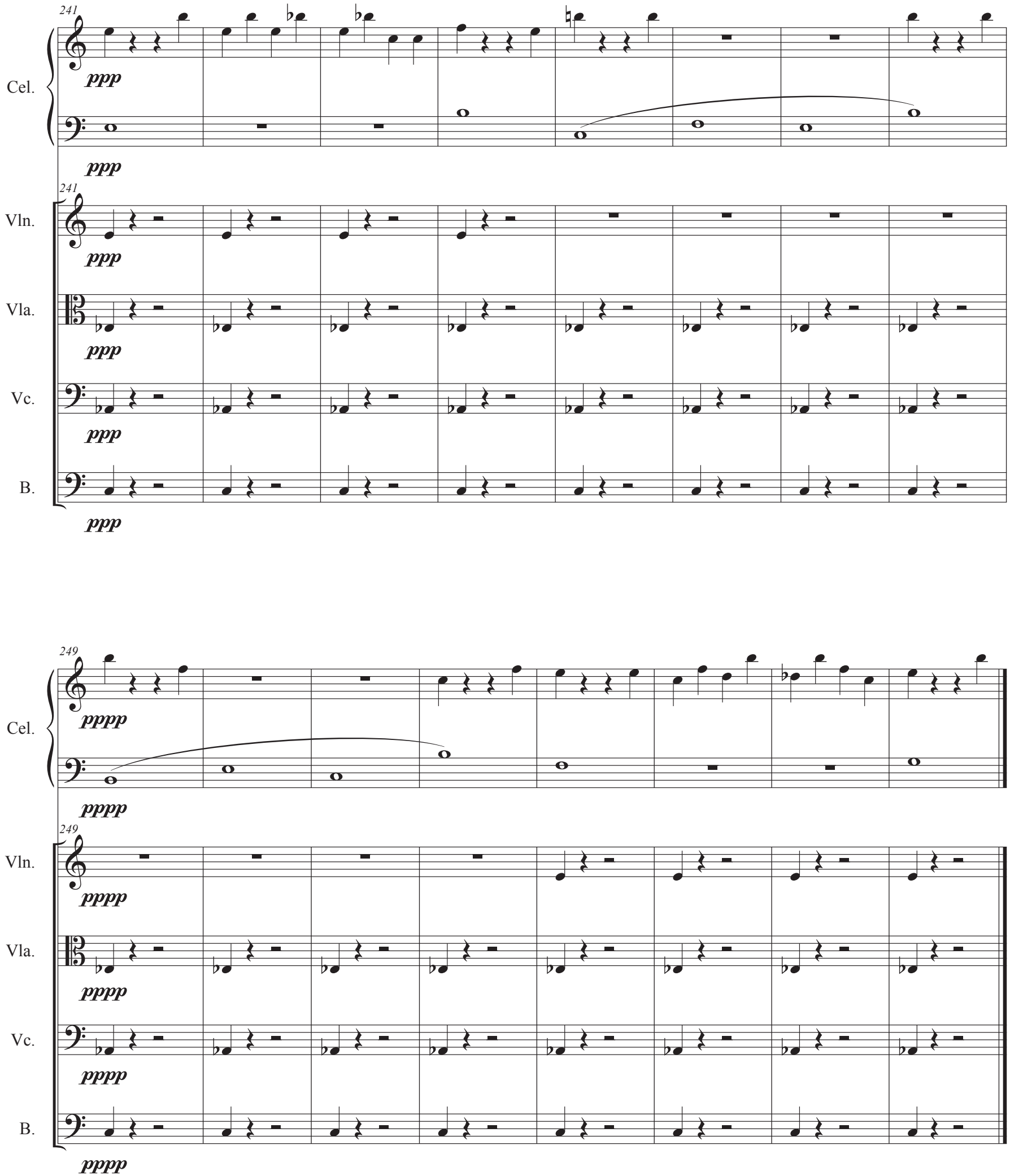

177
Cel.
ff
ff
177
Vln.
ff
Vla.
ff
Vc.
ff
B.
ff
185
Cel.
fff
fff
185
Vln.
fff
Vla.
fff
Vc.
fff
B.
fff


193
Cel.
mp
mp
193
Vln.
mp
Vla.
mp
Vc.
mp
B.
mp
201
Cel.
201
Vln.
Vla.
Vc.
B.


209
Cel.
p
p
209
Vln.
p
Vla.
p
Vc.
p
B.
p


217
Cel.
217
Vln.
Vla.
Vc.
B.


225
Cel.
pp
pp
225
Vln.
pp
Vla.
pp
Vc.
pp
B.
pp
233
Cel.
233
Vln.
Vla.
Vc.
B.

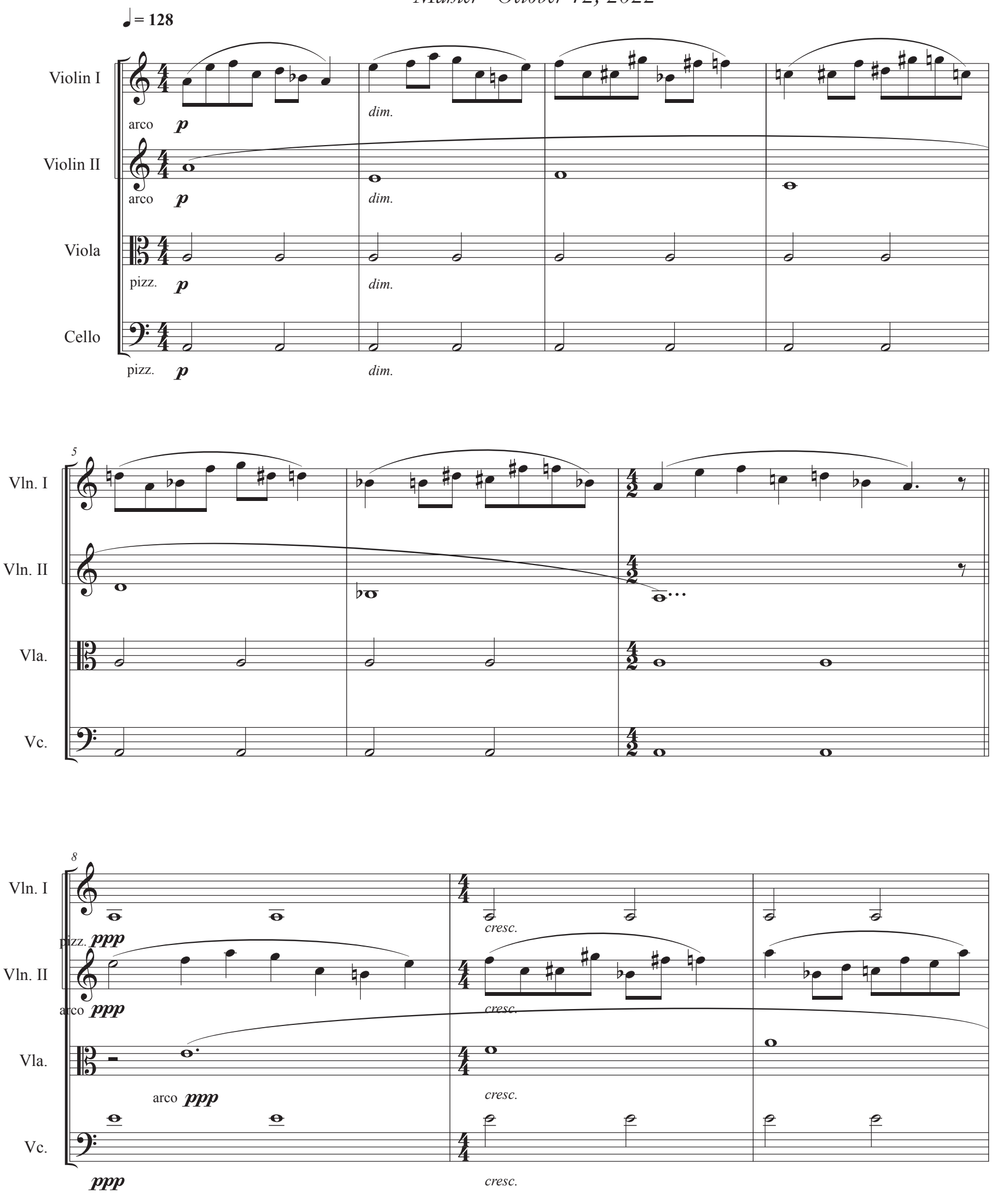

241
Cel.
ppp
ppp
241
Vln.
ppp
Vla.
ppp
Vc.
ppp
B.
ppp
249
Cel.
pppp
pppp
249
Vln.
pppp
Vla.
pppp
Vc.
pppp
B.
pppp

Score

L-System

"Mahler" October 12, 2022

Steven Schwarz



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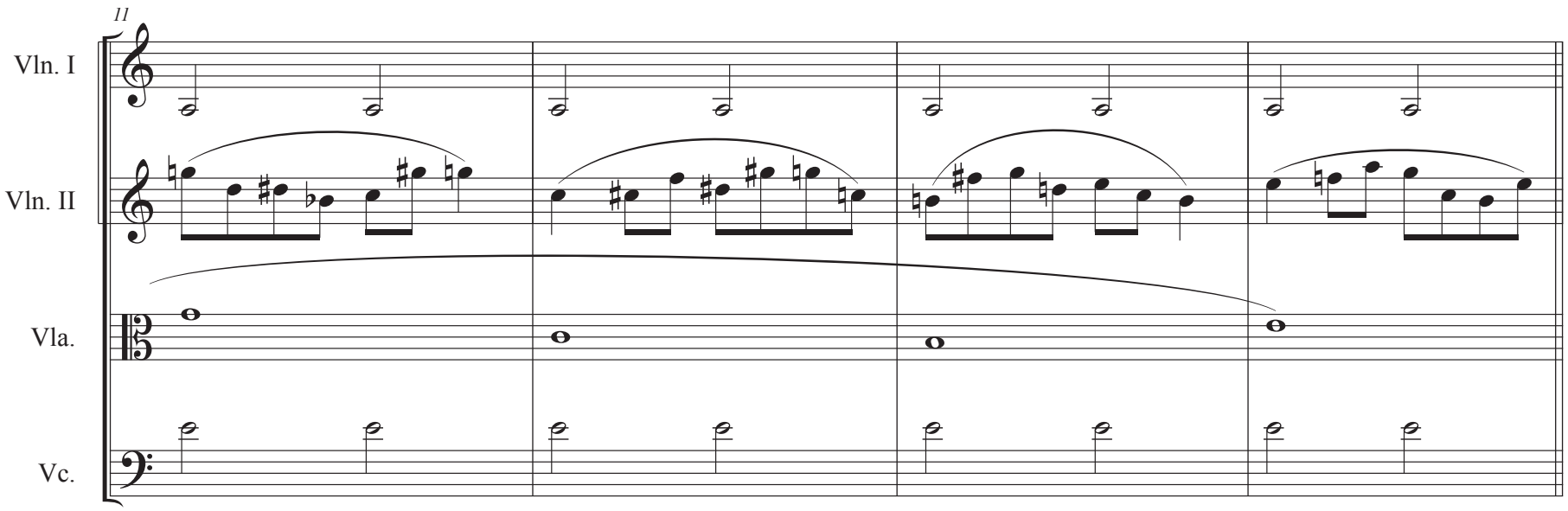
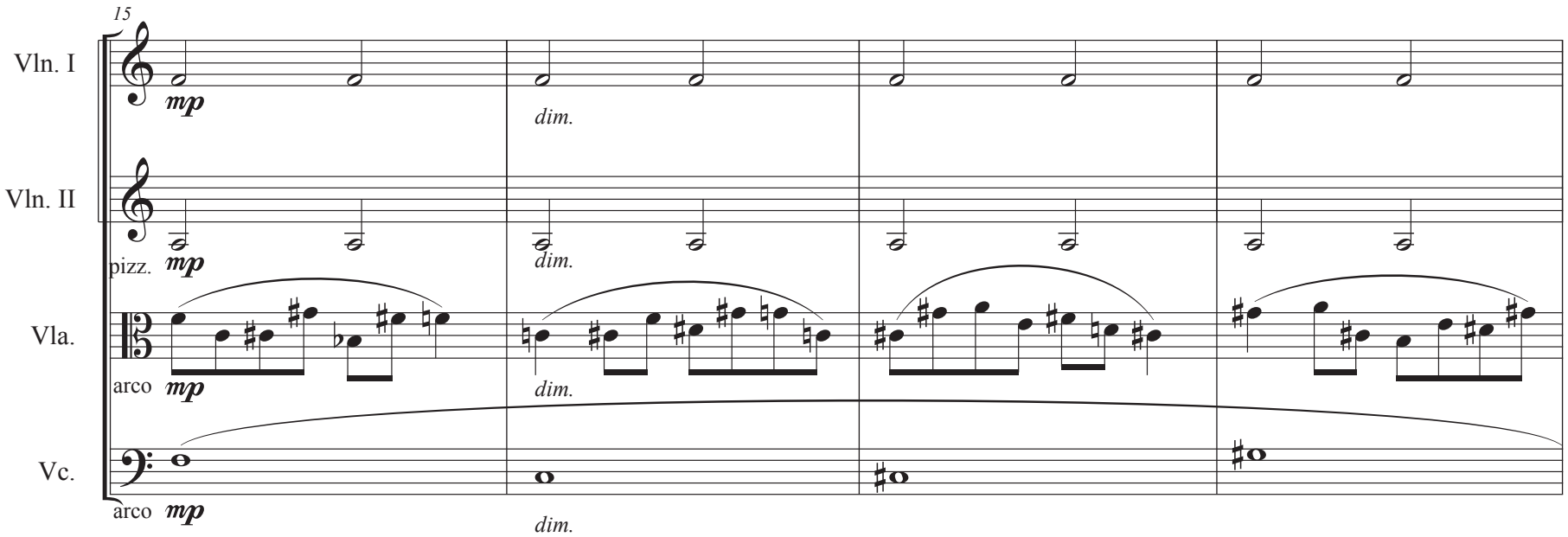
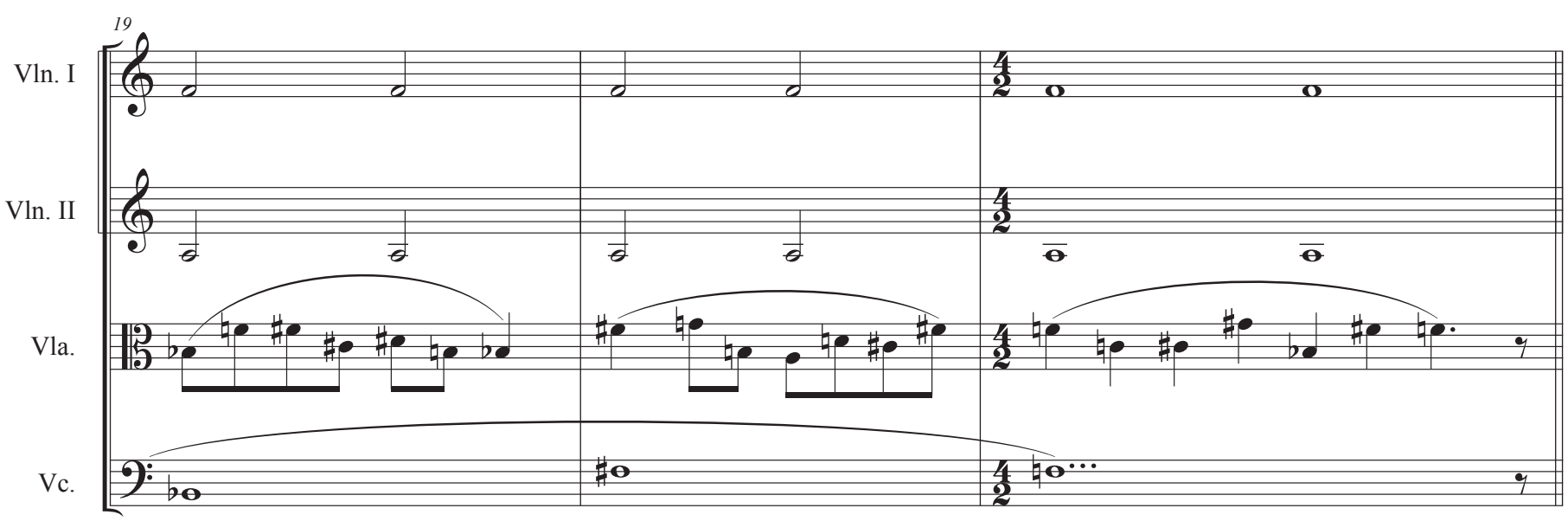

11
Vln. I
Vln. II
Vla.
Vc.


15
Vln. I
mp
dim.
Vln. II
pizz.
mp
dim.
Vla.
arco
mp
dim.
Vc.
arco
mp
dim.


19
Vln. I
Vln. II
Vla.
Vc.

22

Vln. I

arco *ppp*

cresc.

Vln. II

ppp

cresc.

Vla.

pizz. *ppp*

cresc.

Vc.

arco *ppp*

cresc.

25

Vln. I

Vln. II

Vla.

Vc.

29

Vln. I

arco *mf*

dim.

Vln. II

arco *mf*

dim.

Vla.

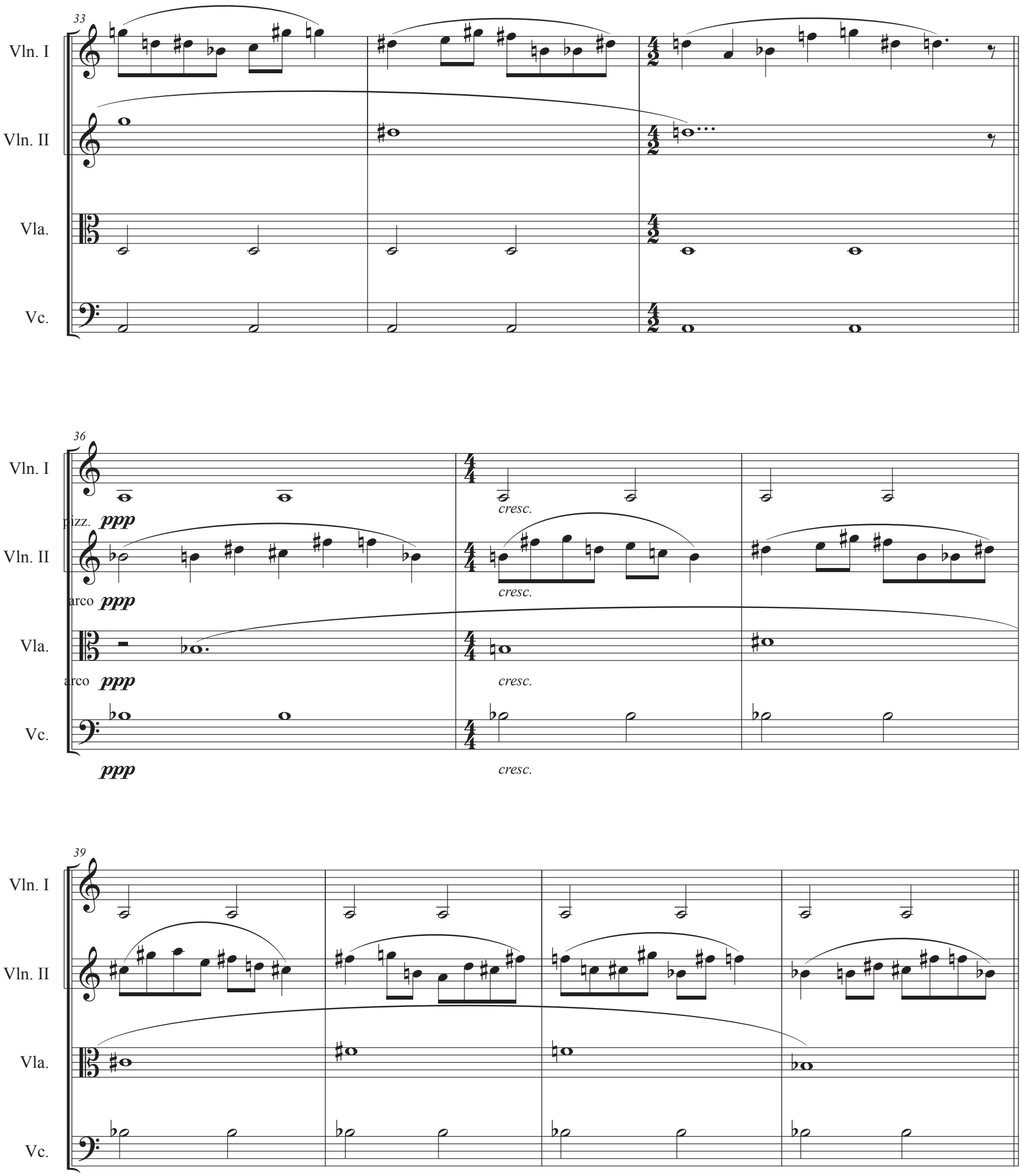
mf

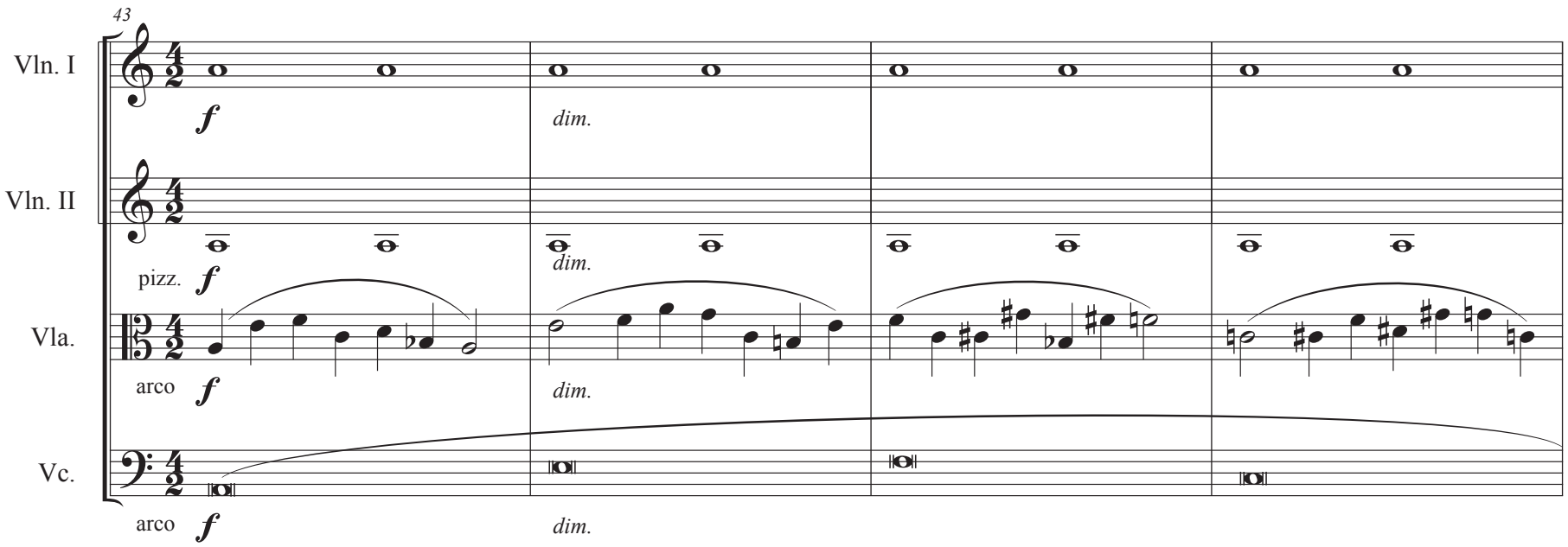
dim.

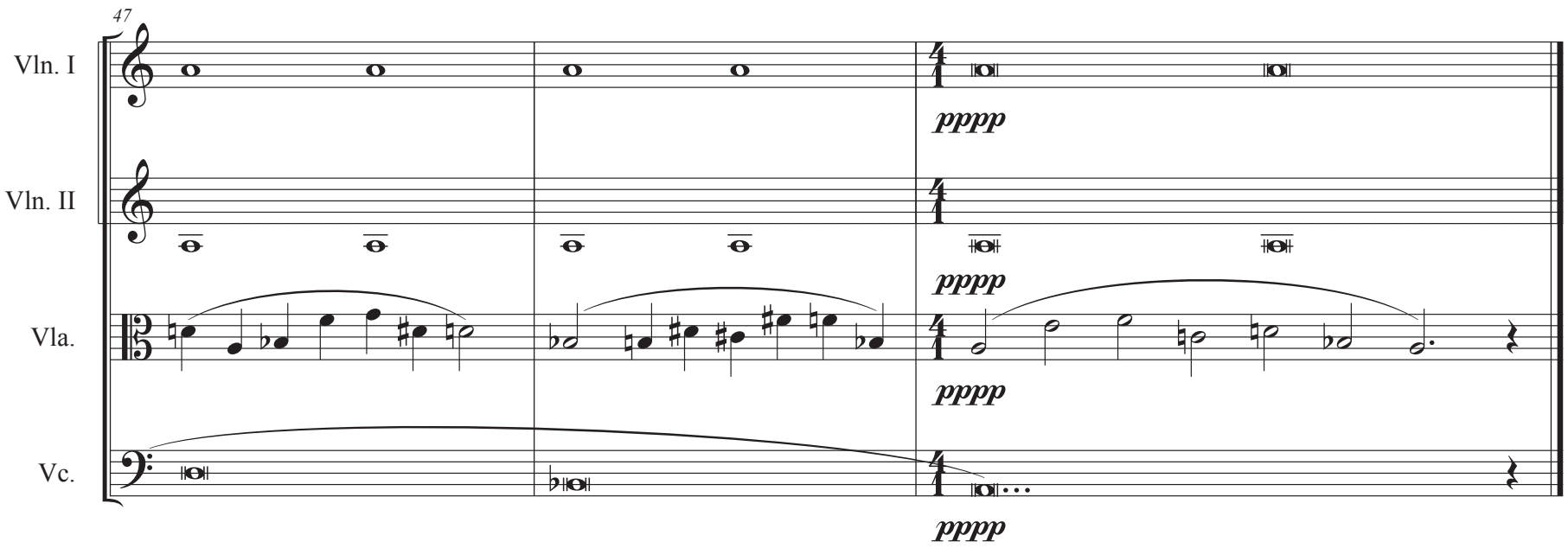
Vc.

pizz. *mf*

dim.


33
Vln. I
Vln. II
Vla.
Vc.
36
Vln. I
pizz.
ppp
Vln. II
arco
ppp
Vla.
arco
ppp
Vc.
ppp
cresc.
cresc.
cresc.
cresc.
39
Vln. I
Vln. II
Vla.
Vc.


43
Vln. I
f
dim.
Vln. II
pizz.
f
dim.
Vla.
arco
f
dim.
Vc.
arco
f
dim.

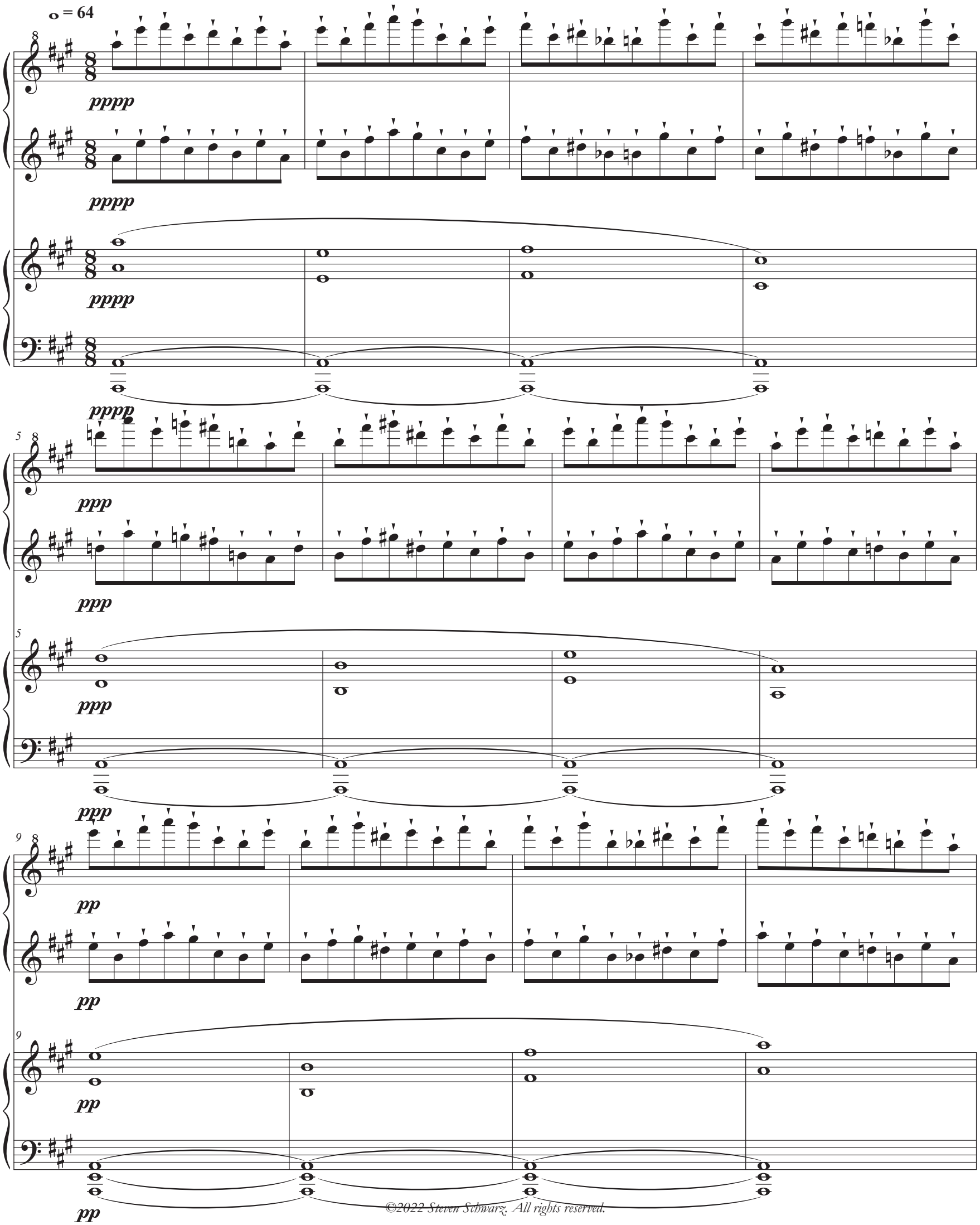

47
Vln. I
pppp
Vln. II
pppp
Vla.
pppp
Vc.
pppp

Score

L-System

"Mahler" October 14, 2022

Steven Schwarz



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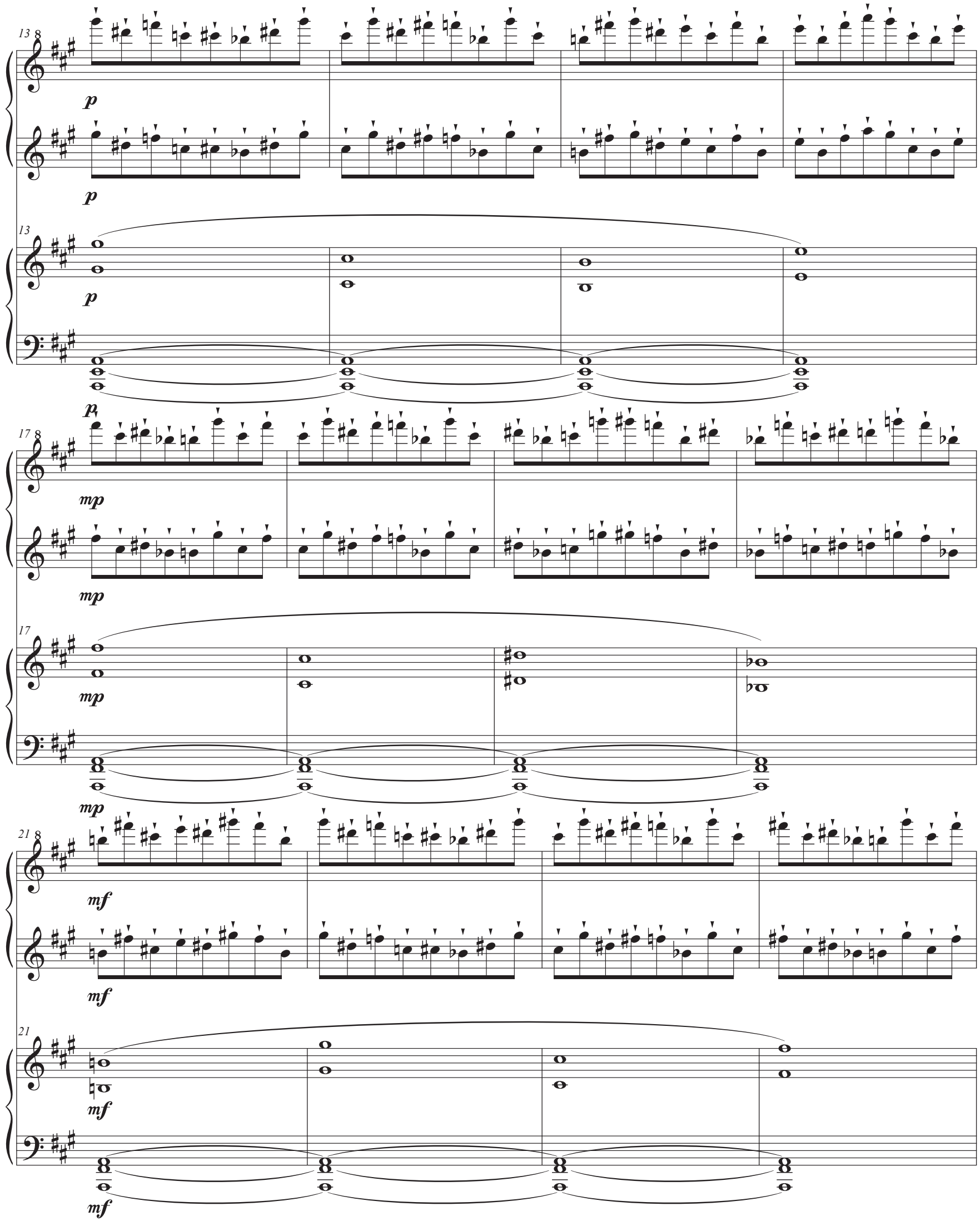
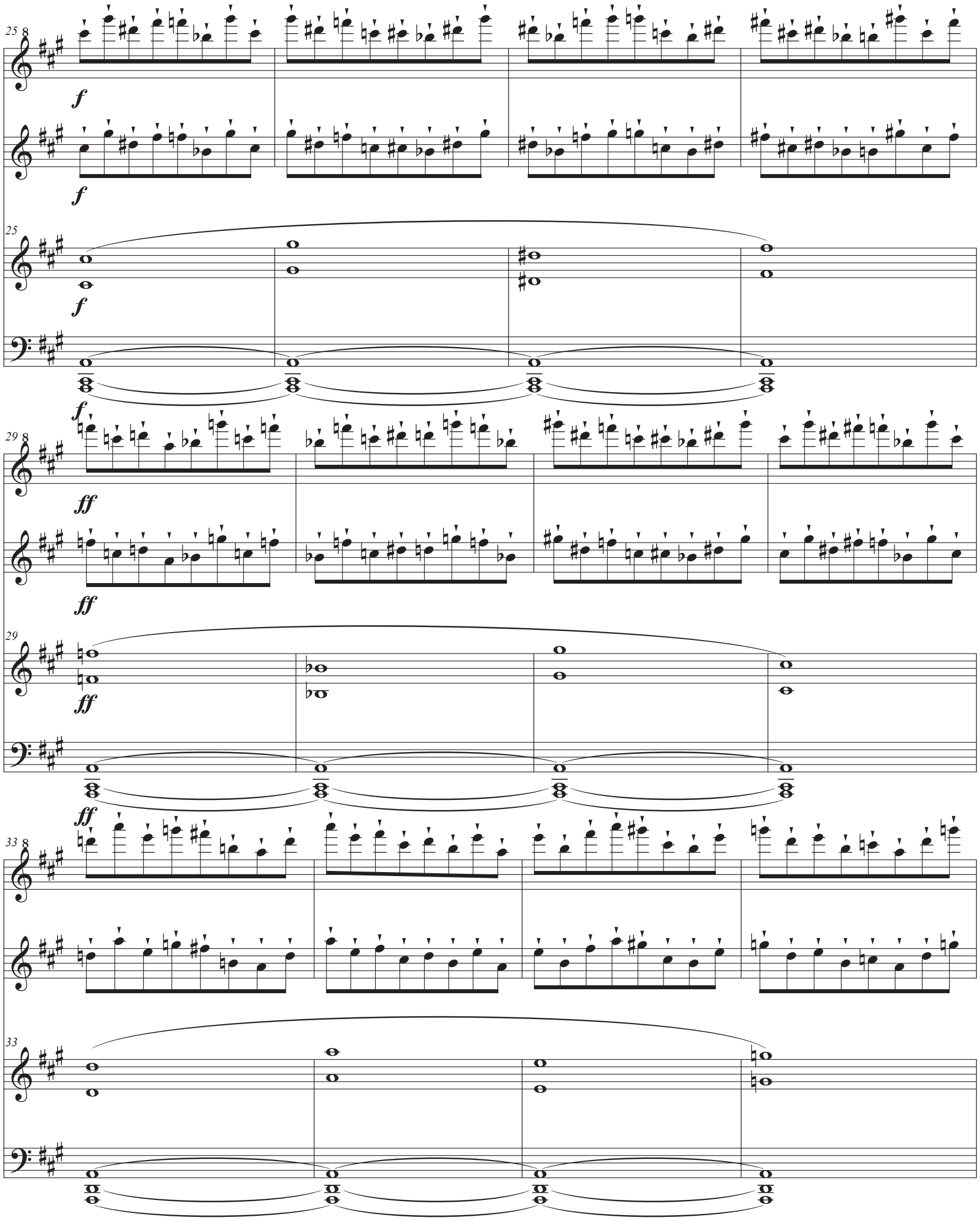
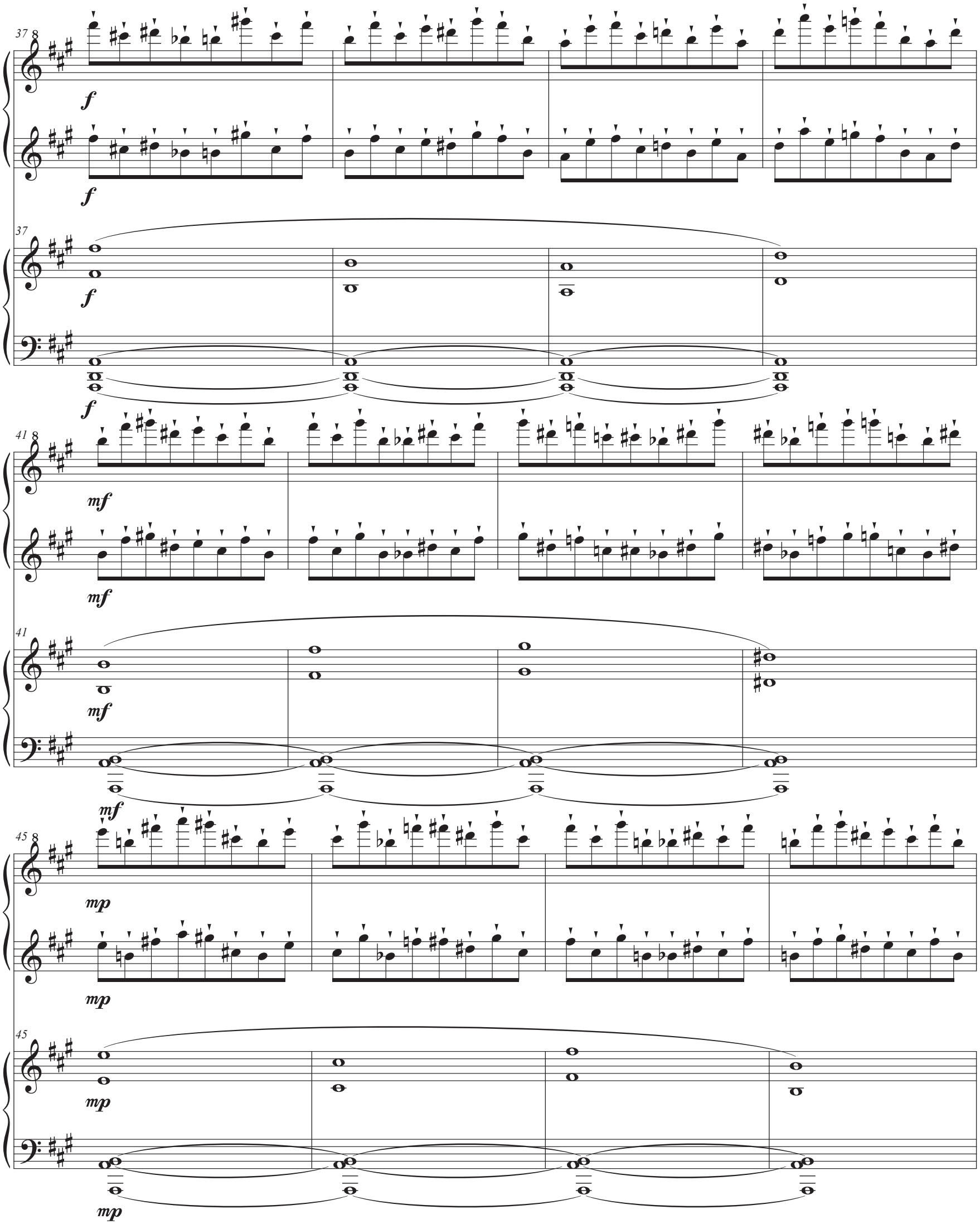
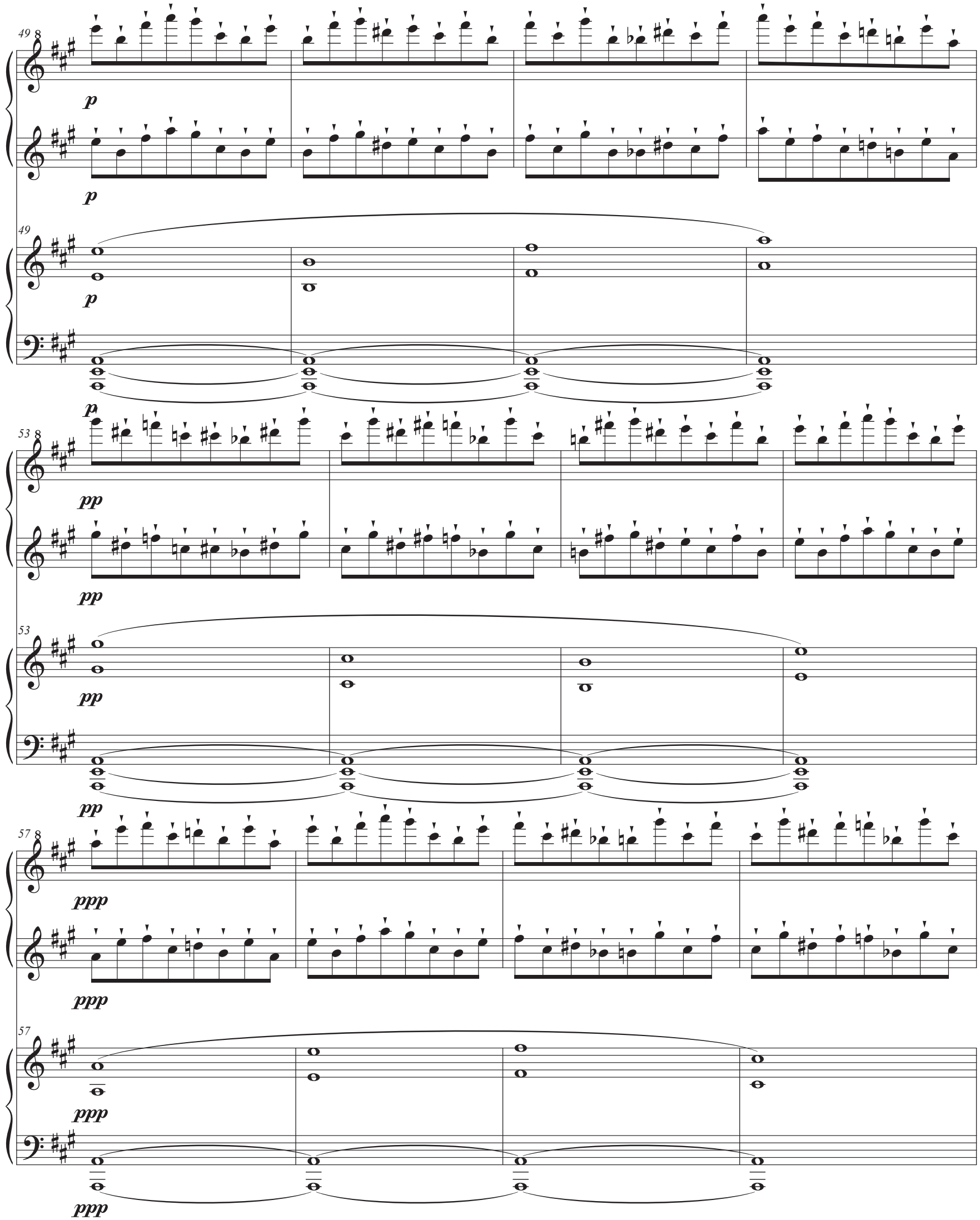
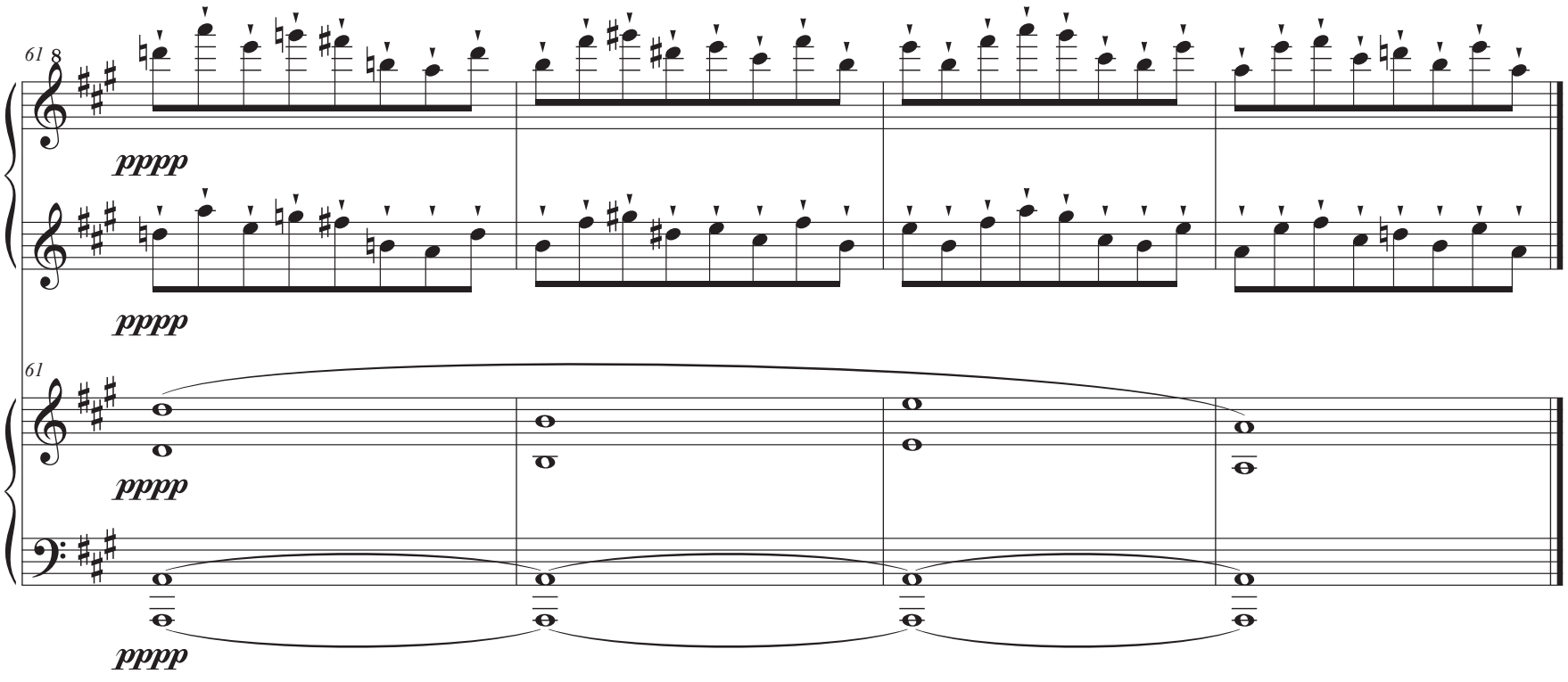

13
p
p
13
p
p
17
mp
mp
17
mp
mp
21
mf
mf
21
mf
mf


25
f
f
25
f
f
29
ff
ff
29
ff
ff
33
33


37
f
f
37
f
f
41
mf
mf
41
mf
mf
45
mp
mp
45
mp
mp


49
p
p
49
p
p
53
pp
pp
53
pp
pp
57
ppp
ppp
57
ppp
ppp


61
pppp
pppp
61
pppp
pppp