

# Creating a Magical Music Experience

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Sony Computer Entertainment Europe WWS

# What is Wonderbook?



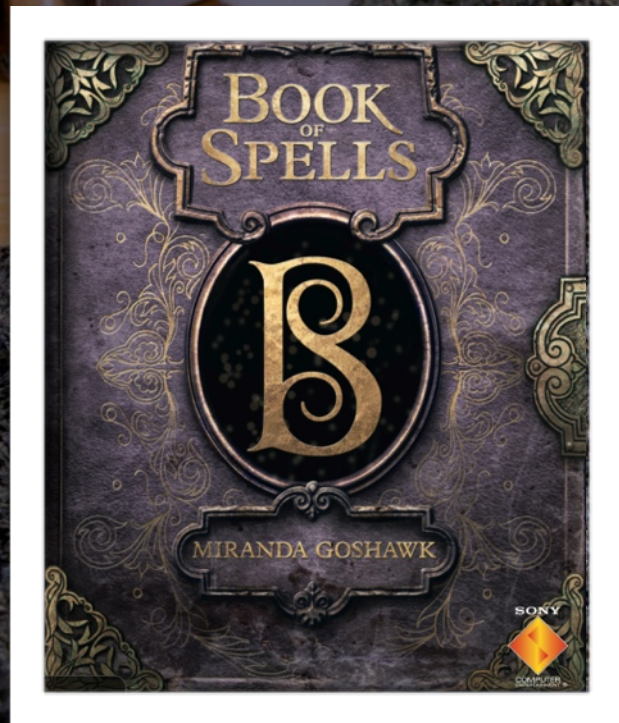


# What is Book of Spells?














# Creating a Magical Music Experience

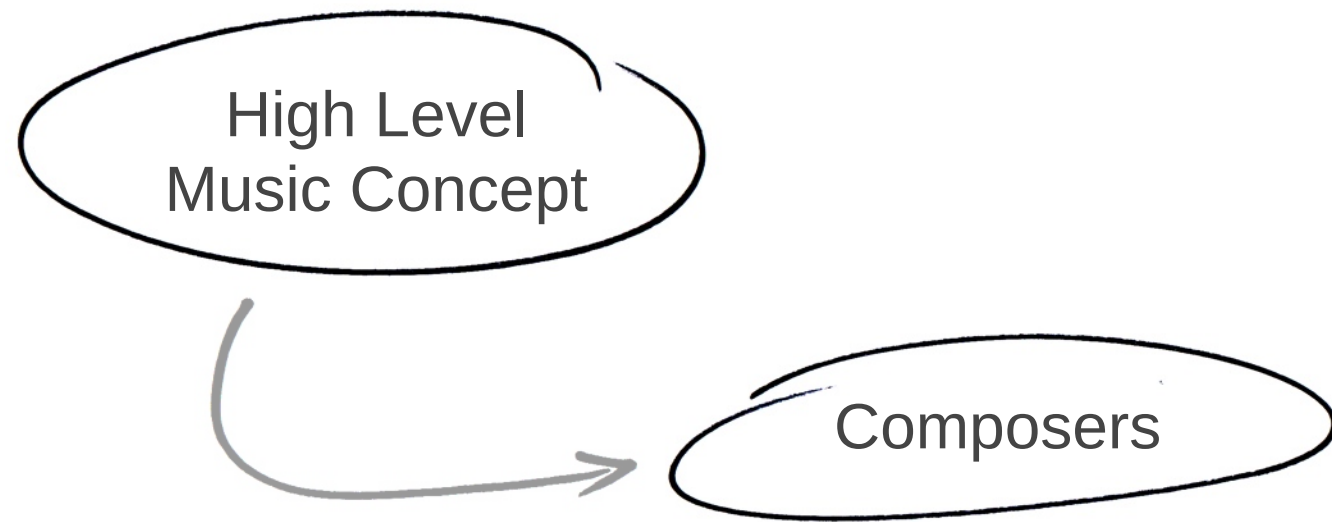


# Creating a Magical Music Experience

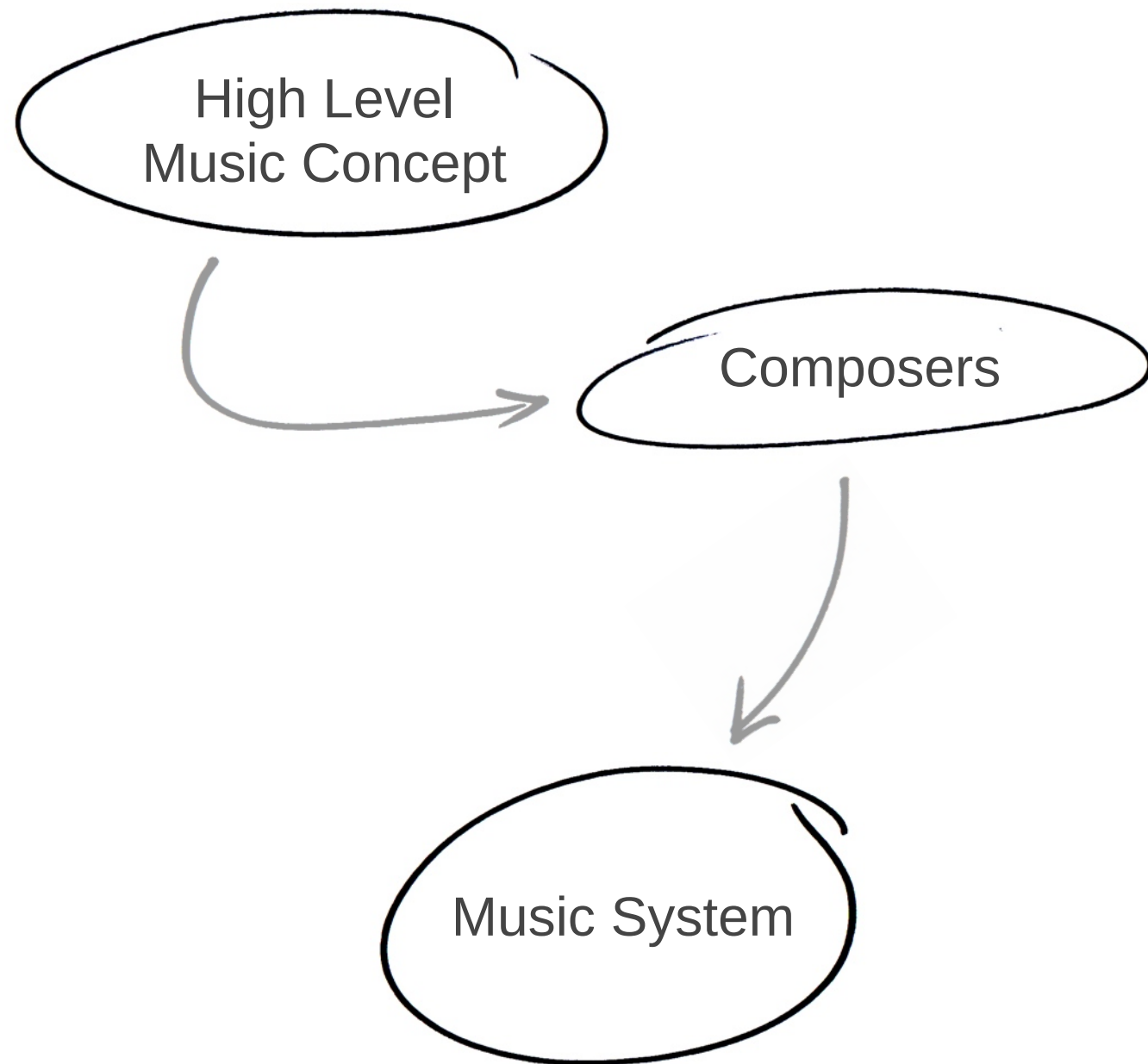


High Level  
Music Concept

# Creating a Magical Music Experience

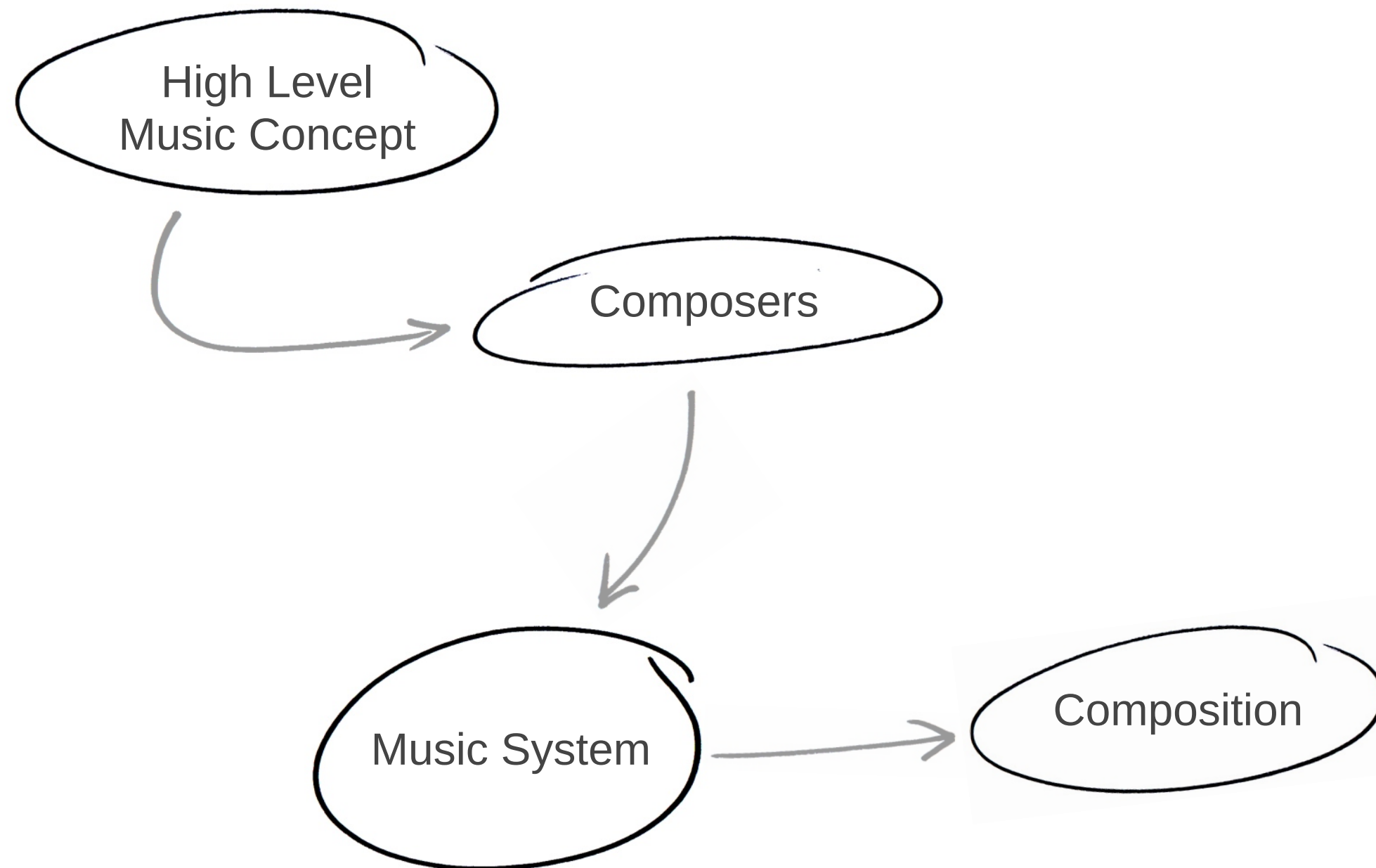


# Creating a Magical Music Experience

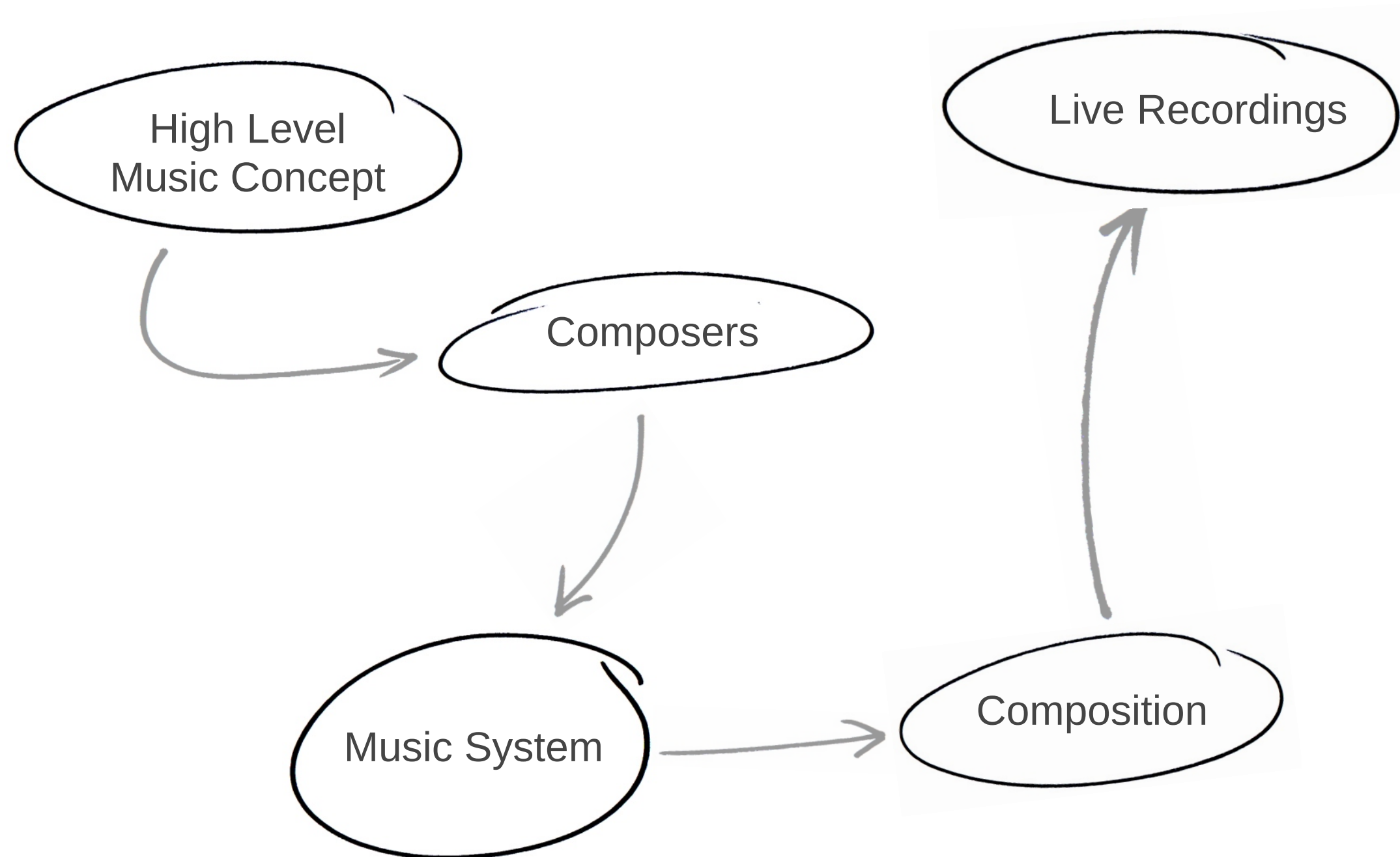




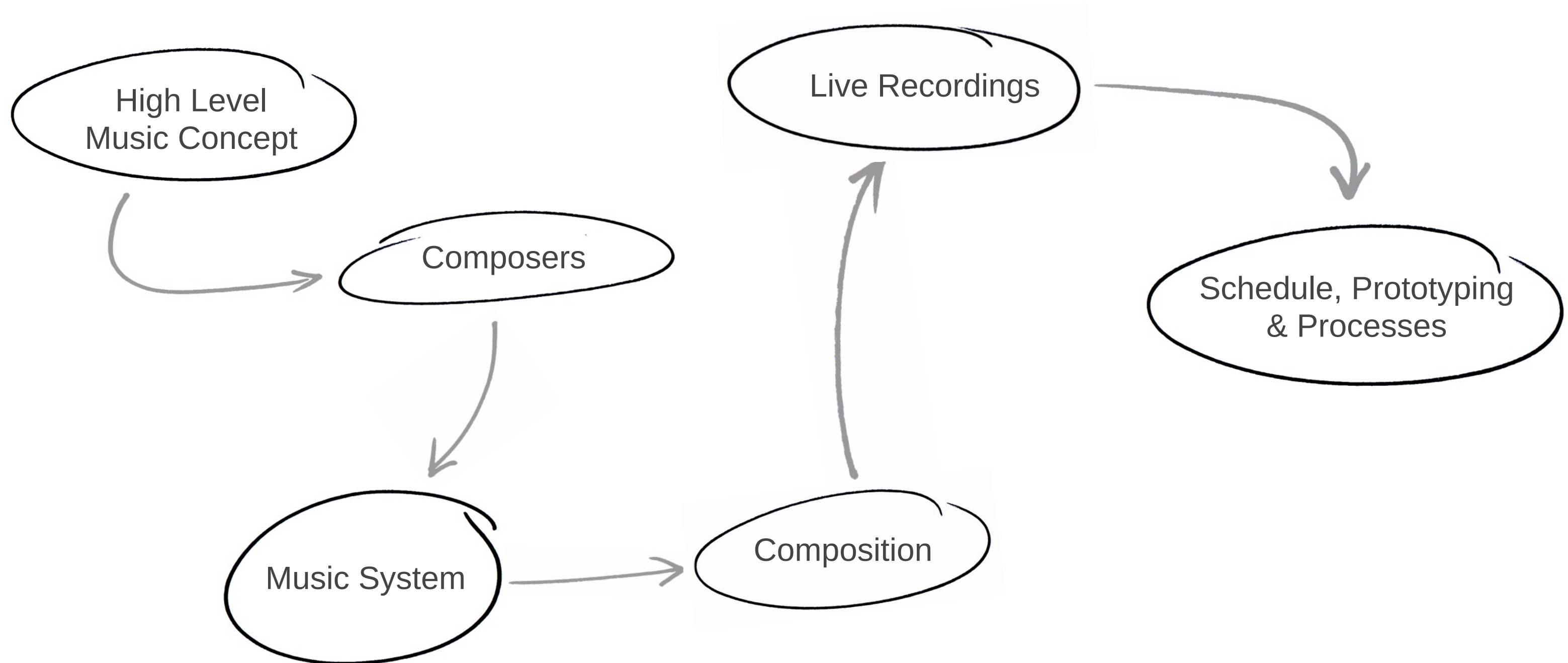
# Creating a Magical Music Experience



# Creating a Magical Music Experience

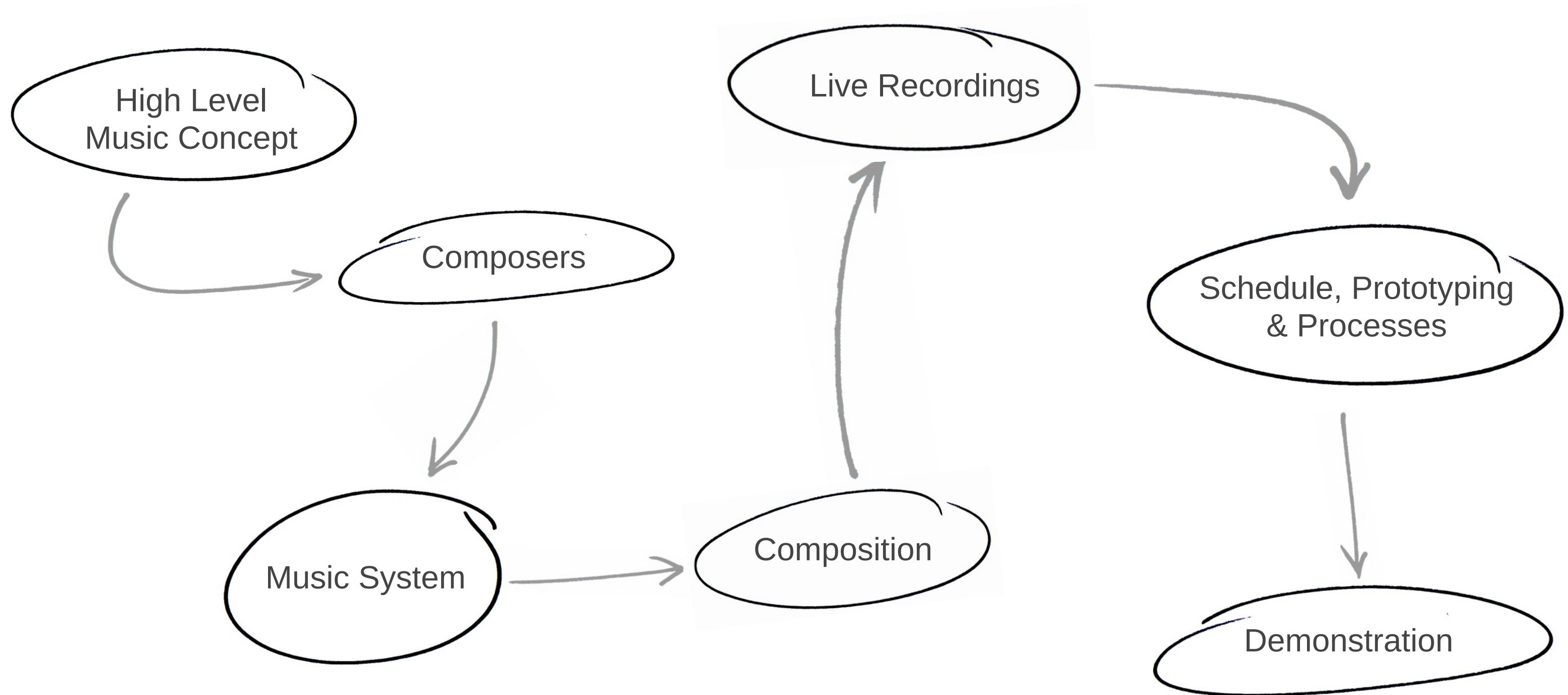


# Creating a Magical Music Experience





# Creating a Magical Music Experience



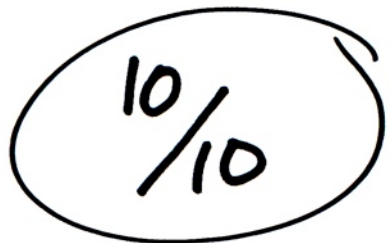
# High Level Music Concept

*Create a Classical Symphony rather than game soundtrack*

*A seamless journey through 100 years of music*

*Constantly evolving music score which reacts to any situation*

*Music to support story and narration*



**Book** *(Symphony)*

**Chapter** *(Movements)*

**Spell Theme**

*(Exposition)*

**Activities**

*(Development)*

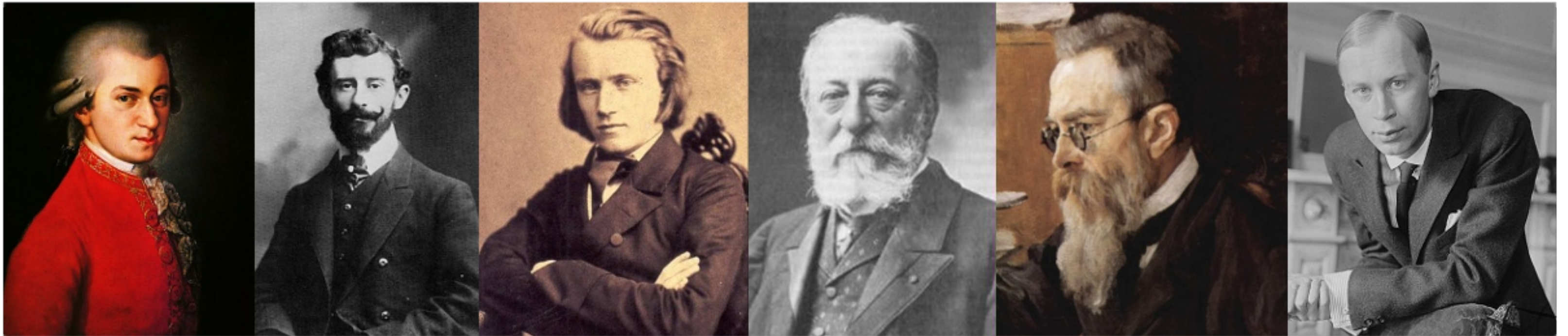
**Underscore**

*(Bridge)*

**Test**

*(Recapitulation)*

# Musical Influences



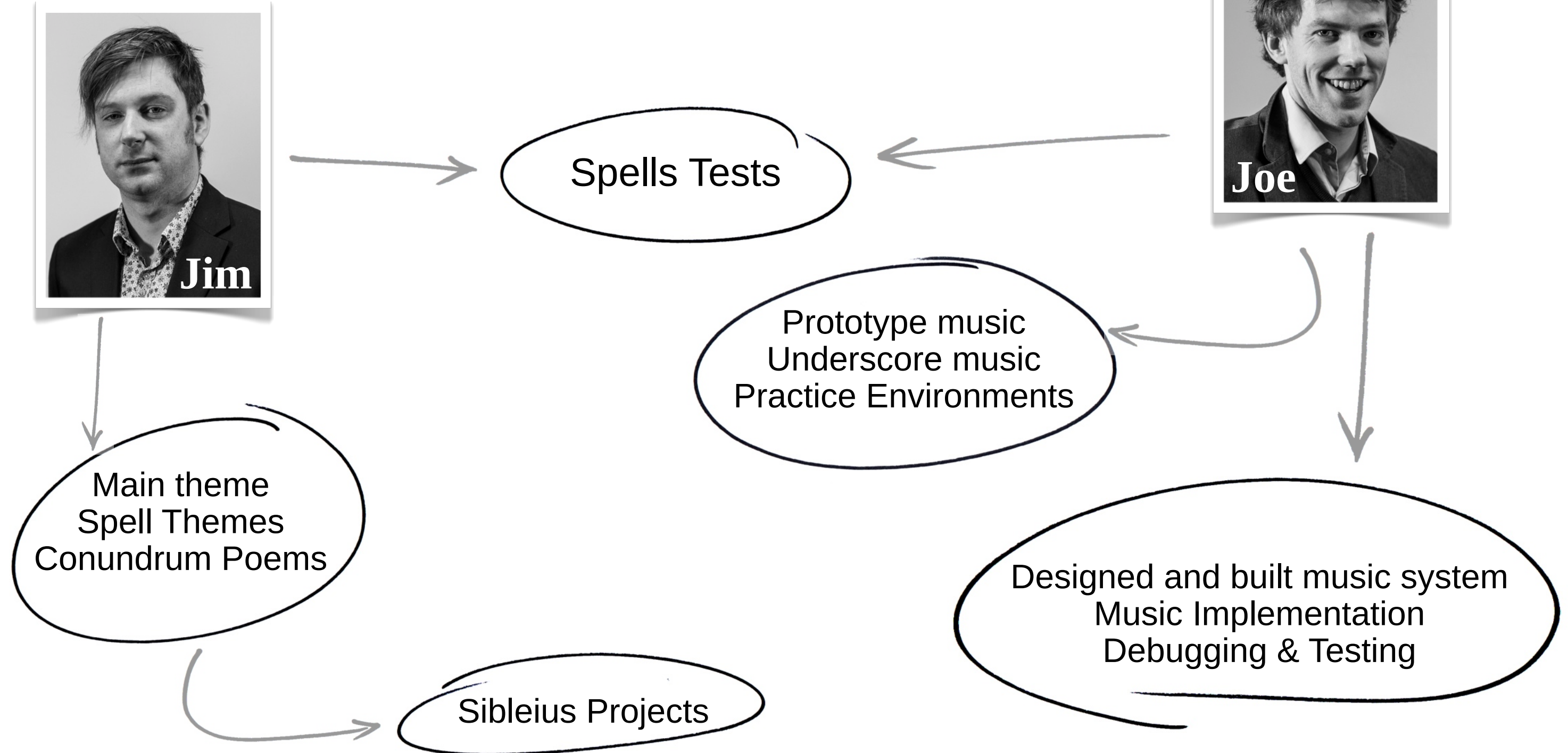




# Composers



# Dividing the work



# Music System

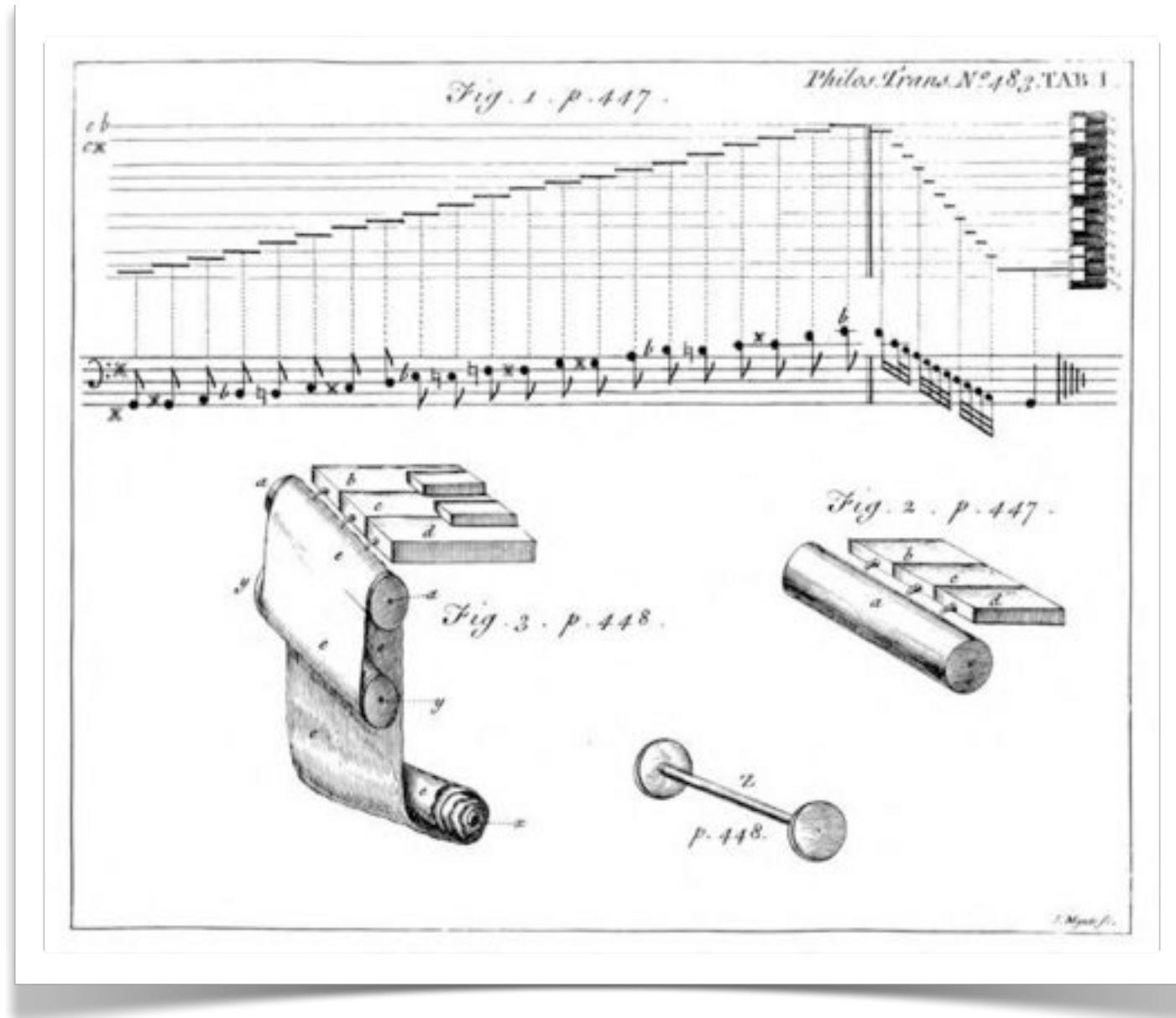
*Modular system*

*Horizontal and vertical layers*

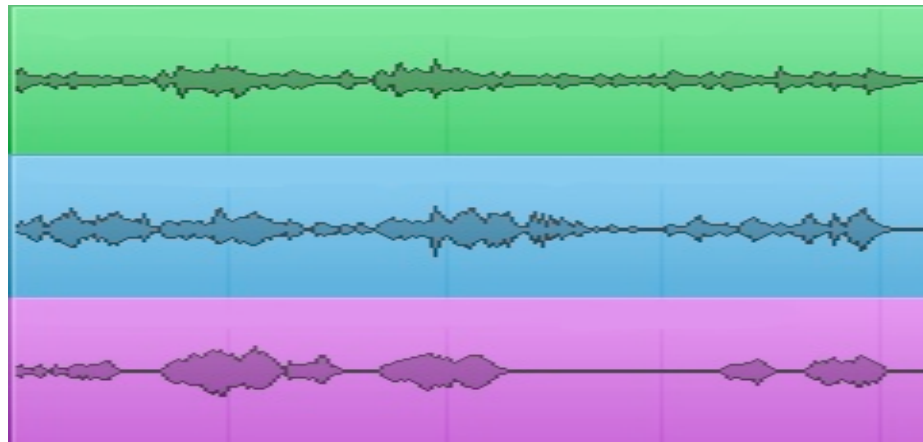
*Tempo synched transitions*

*Multiple transition sections*

*Randomly synched 'flourishes'*



# Layers



**BASE**

- Harmonic content

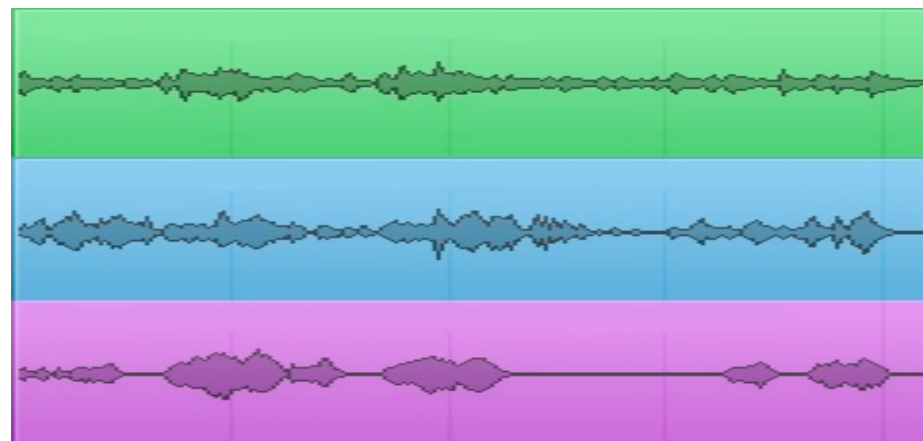
**ACTIVE**

- Melodic content

**INCANTATION**

- Alternative melodic content

# Layers



**BASE**

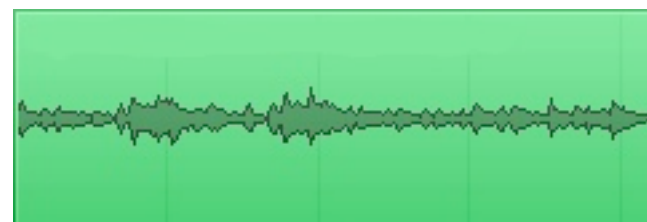
- Harmonic content

**ACTIVE**

- Melodic content

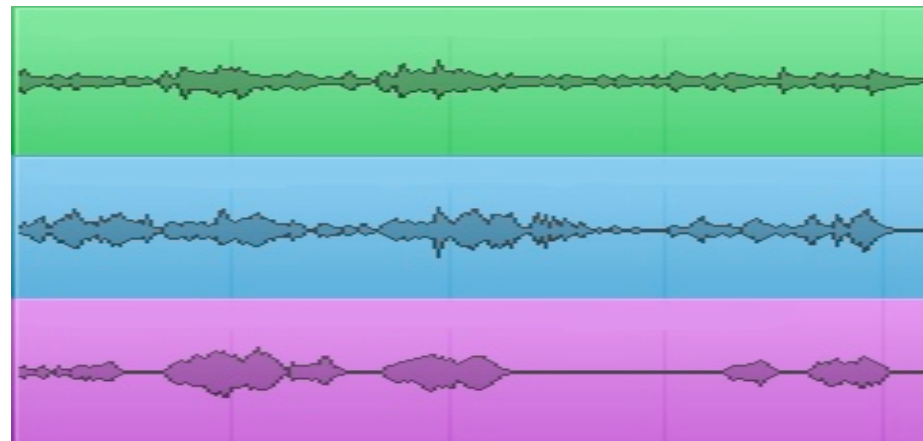
**INCANTATION**

- Alternative melodic content



**Base**

# Layers



**BASE**

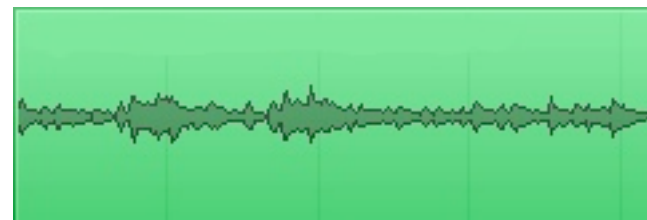
- Harmonic content

**ACTIVE**

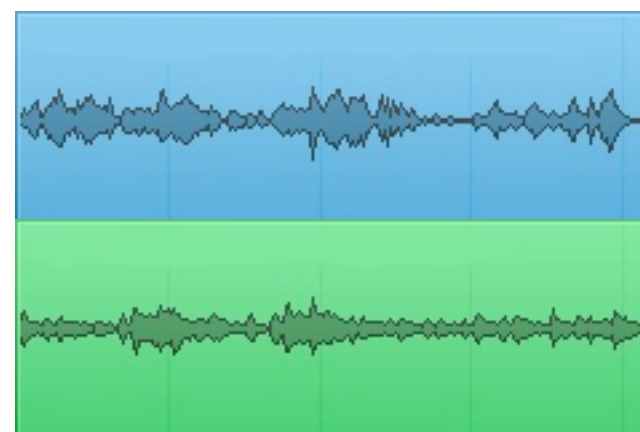
- Melodic content

**INCANTATION**

- Alternative melodic content

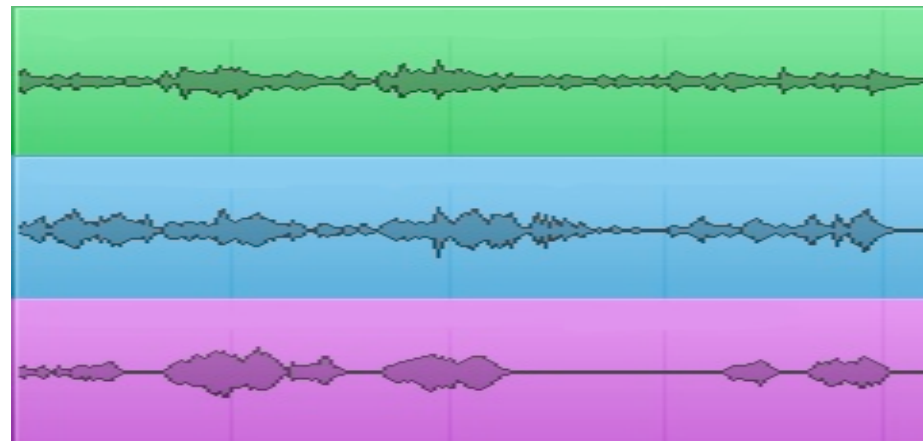


**Base**



**Base + Active**

# Layers



**BASE**

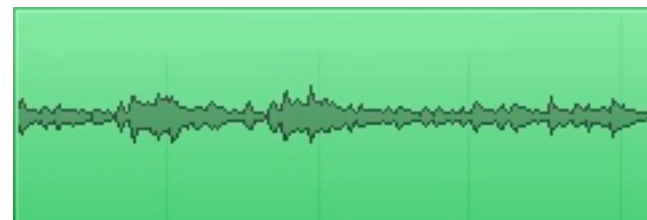
- Harmonic content

**ACTIVE**

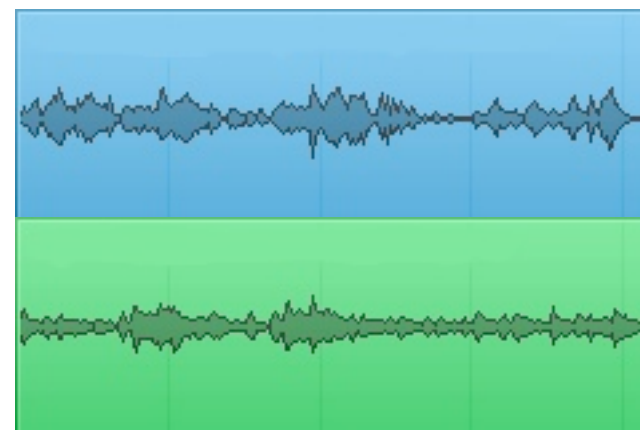
- Melodic content

**INCANTATION**

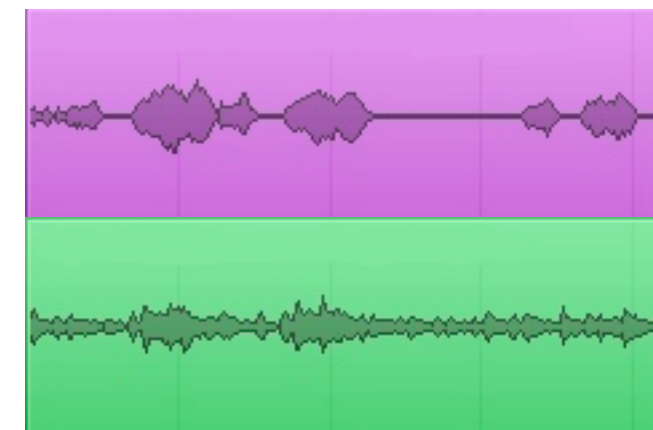
- Alternative melodic content



**Base**



**Base + Active**



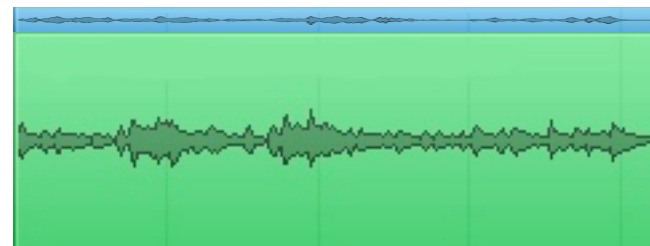
**Base + Incantation**



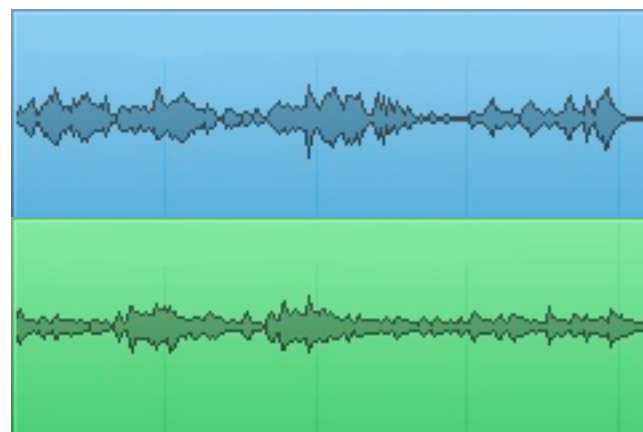
# Layers

Incantation layer plays  
when spell has  
been activated

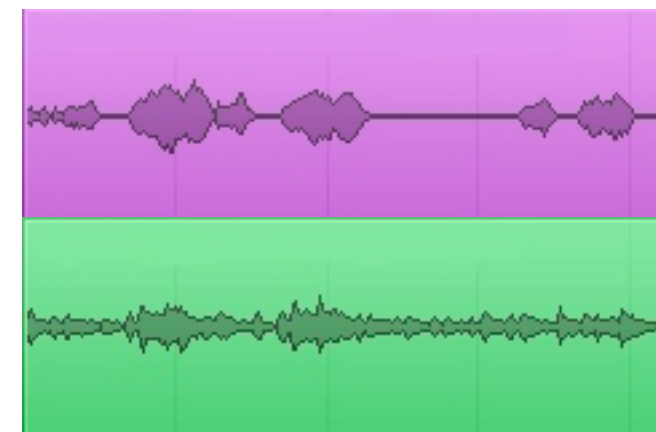
Active + Incantation layer  
'ducked' by voice over or  
scripted events



**Base**



**Base + Active**



**Base + Incantation**

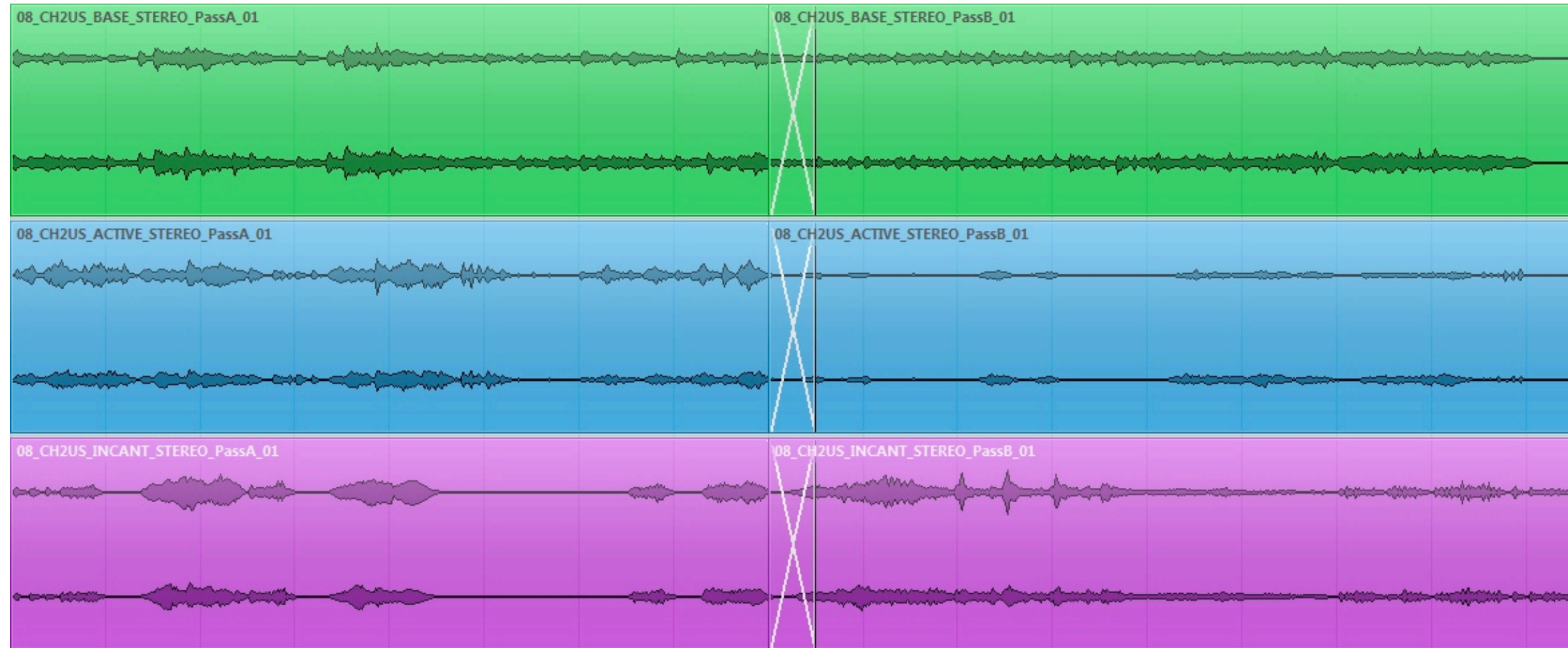


# Chapter 2 Underscore



 **Base Layer**  
 **Active Layer**  
 **Incantation Layer**

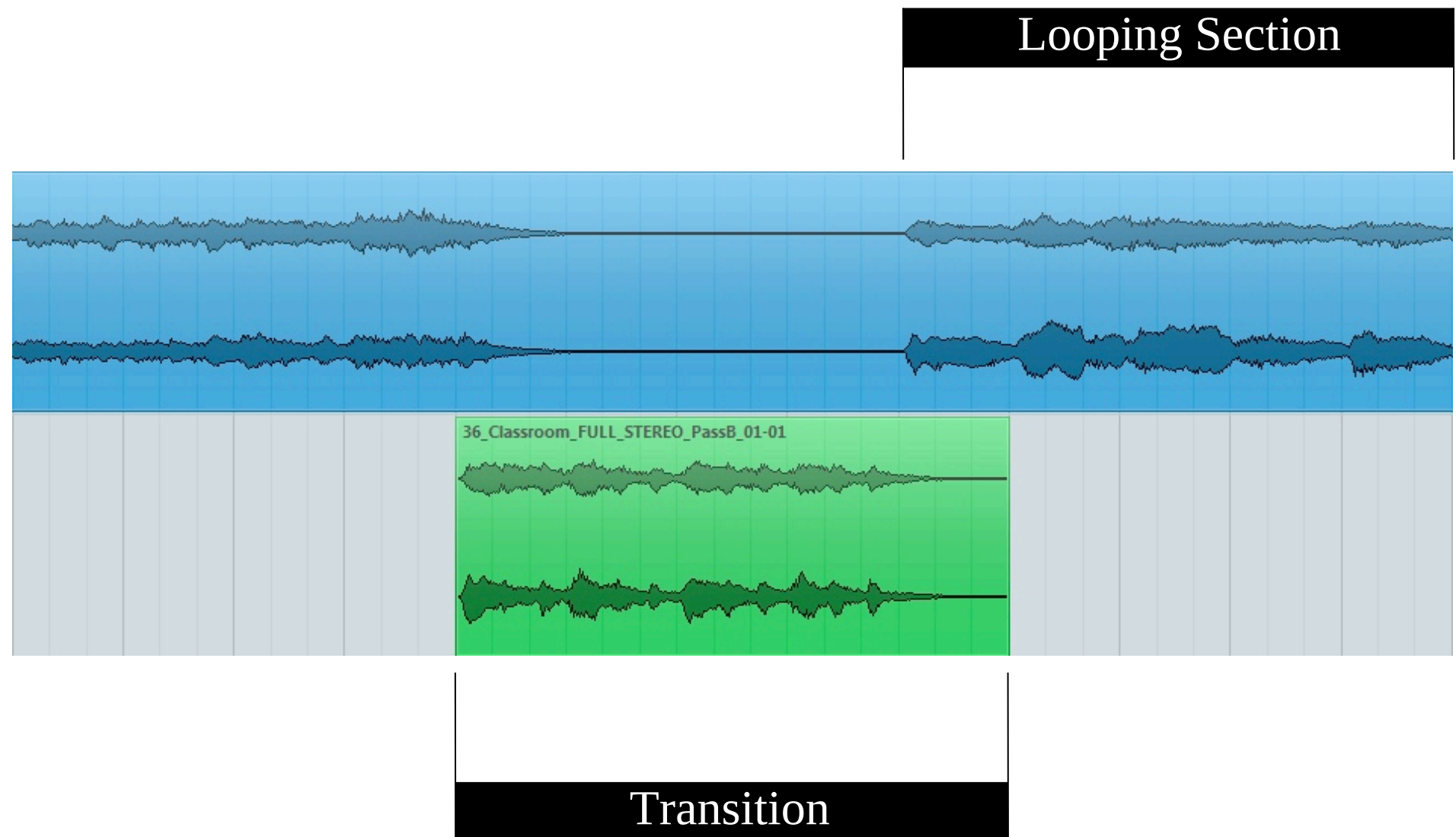
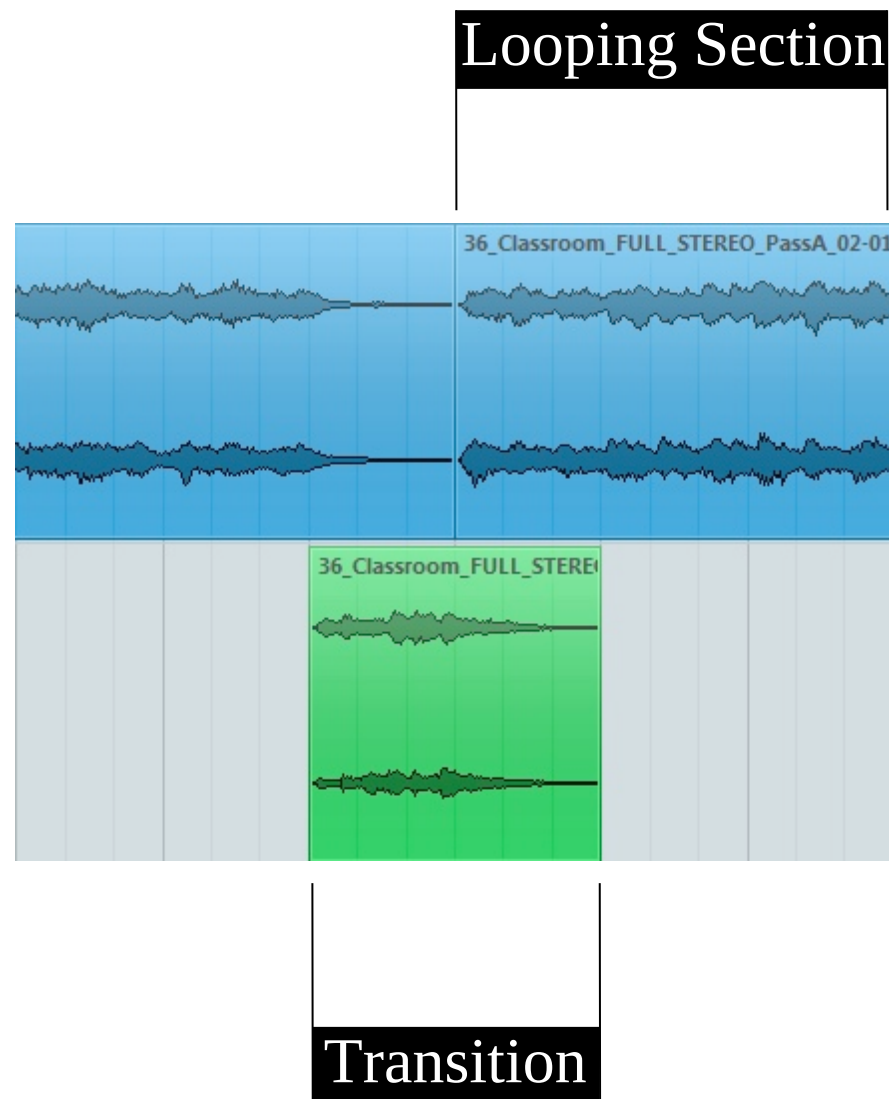
# Transitions Cross Fading



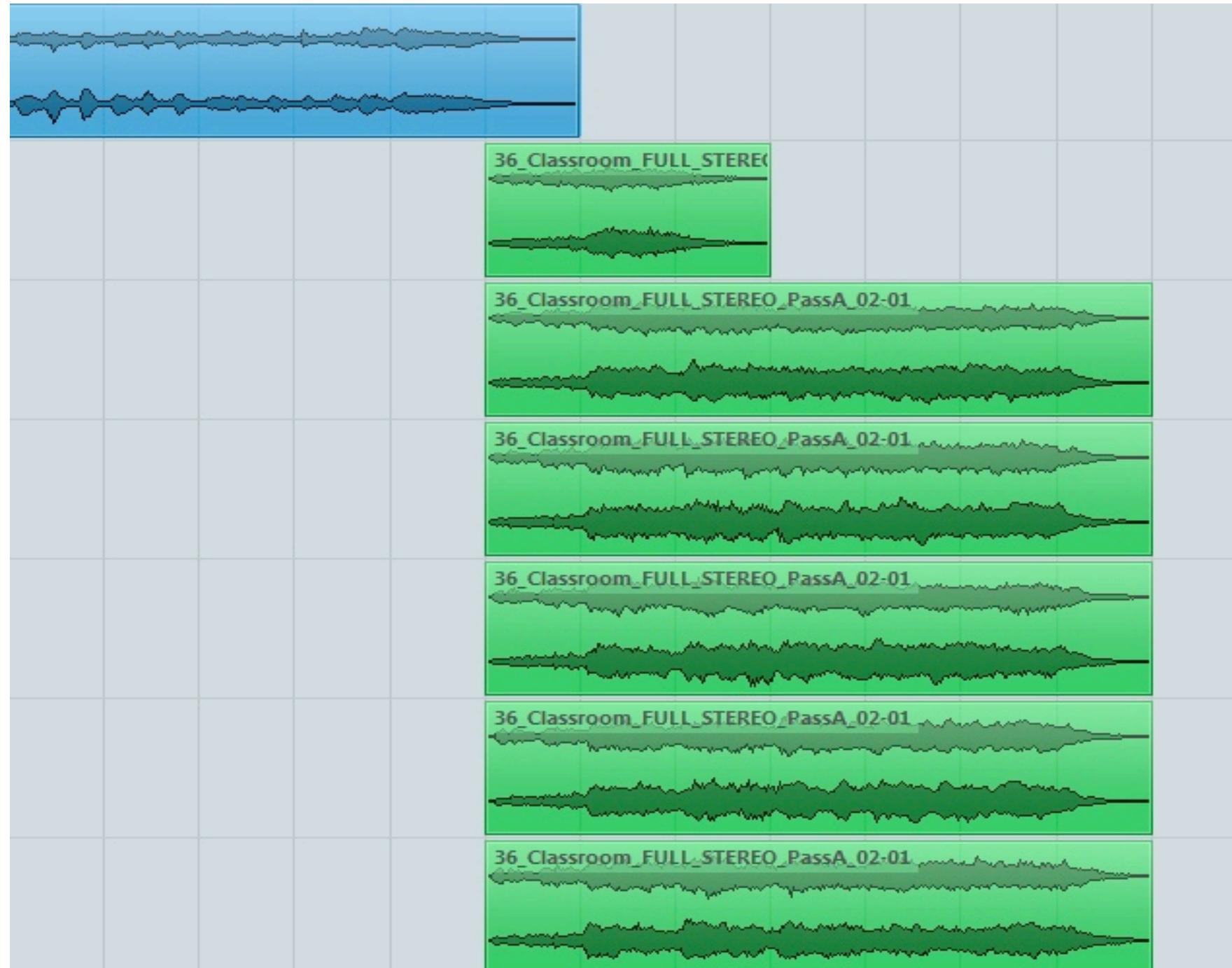
Tempo and beat  
synchronised transitions



# Transitions Bridging Segments



# Transitions Modulation Endings



## Ending Transitions

---

**D** minor (*default ending*)

---

**D** minor – **F** Major

---

**D** minor – **D** Major

---

**D** minor – **C** minor

---

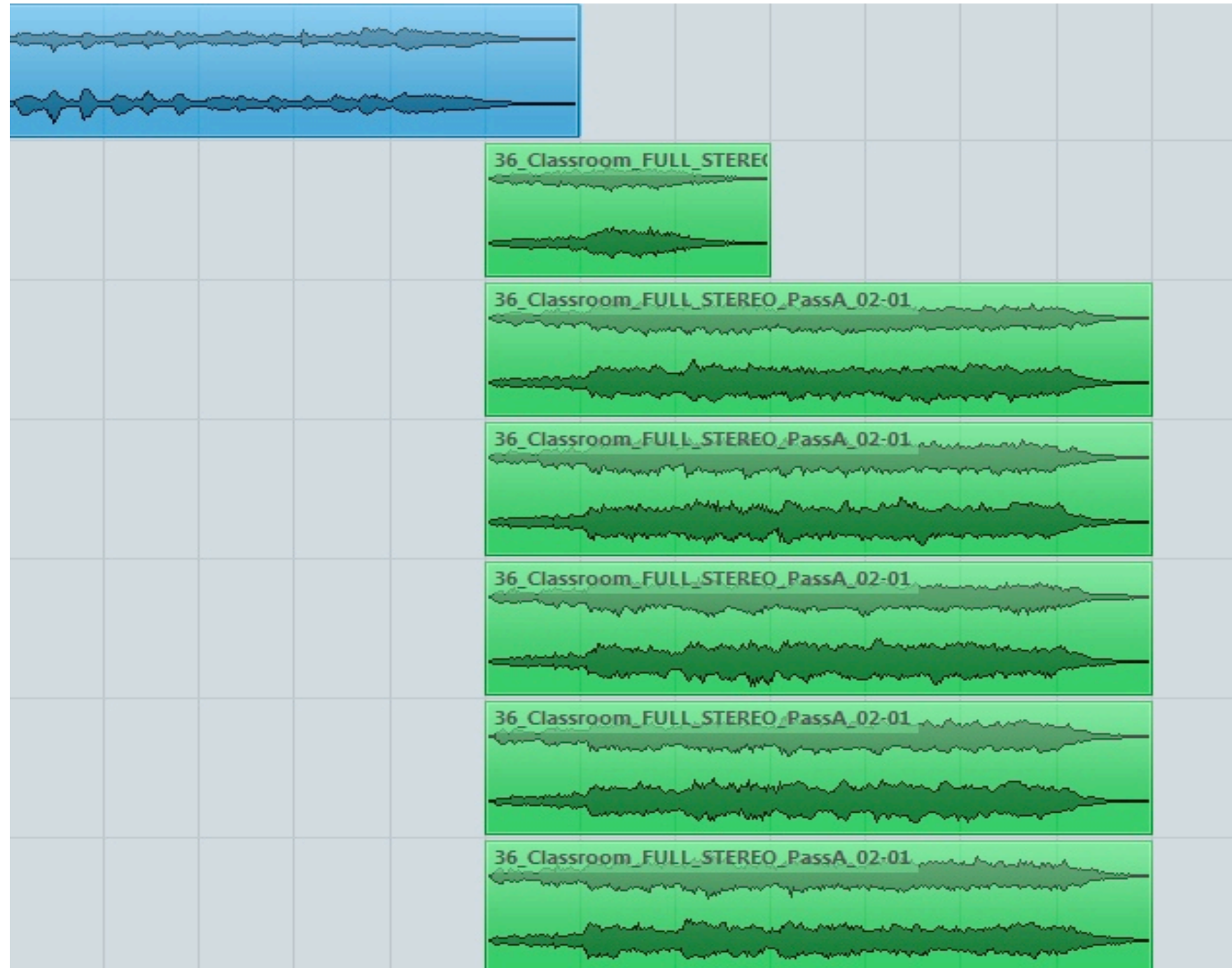
**D** minor – **E** minor

---

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

---

**D** minor (*default ending*)

---

**D** minor – **F** Major

---

**D** minor – **D** Major

---

**D** minor – **C** minor

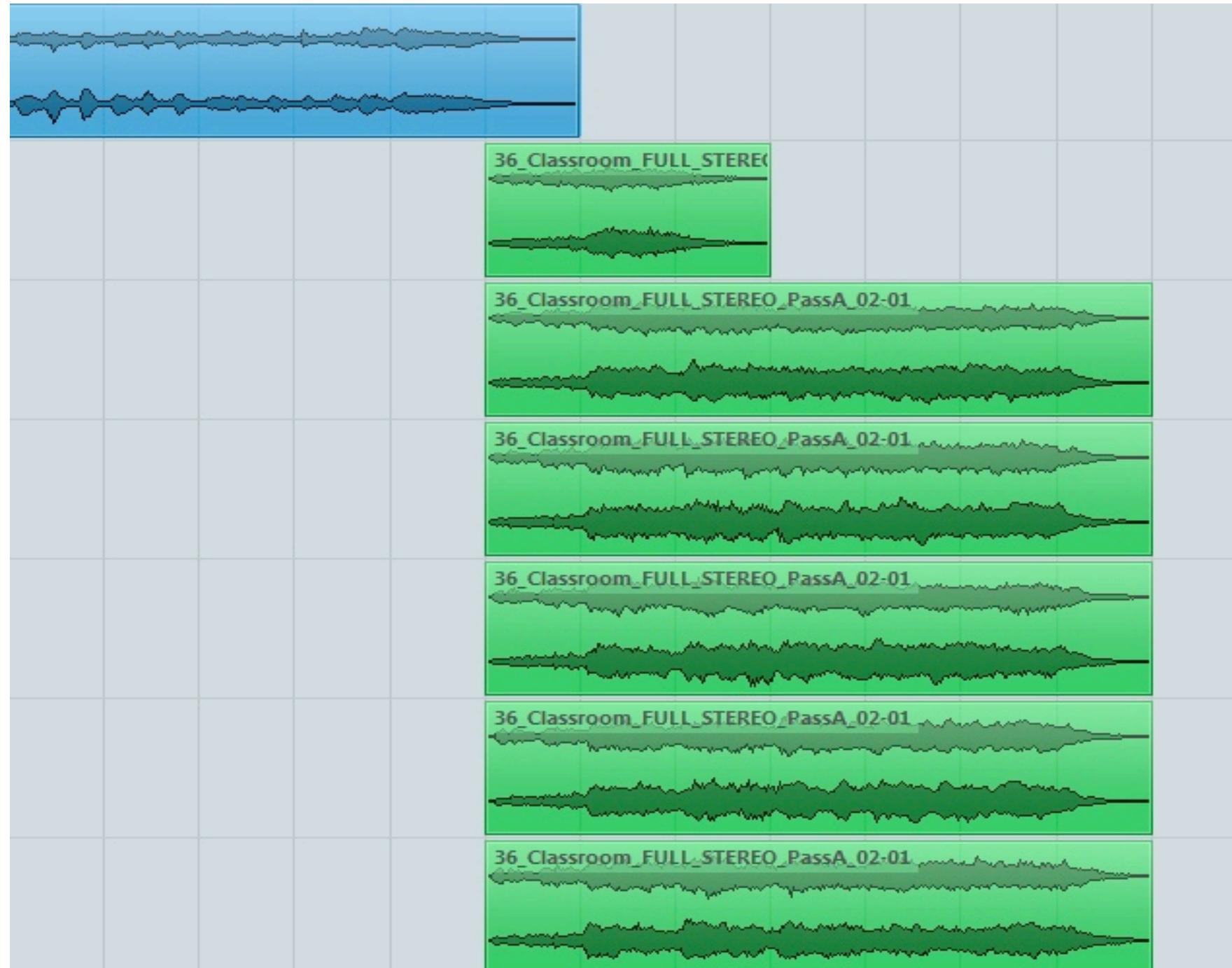
---

**D** minor – **E** minor

---

**D** minor – **G** minor

# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)



**D** minor – **F** Major

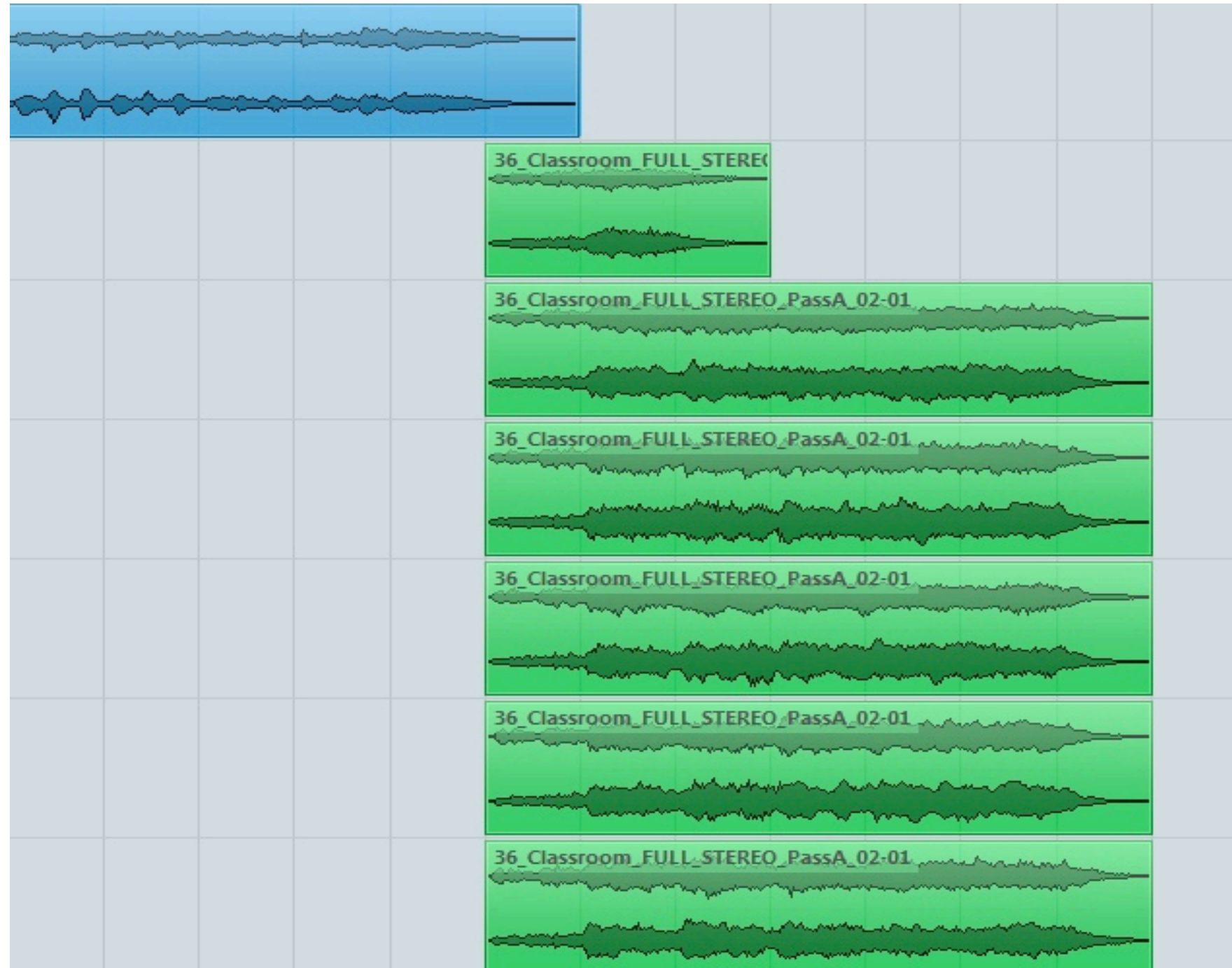
**D** minor – **D** Major

**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor

# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

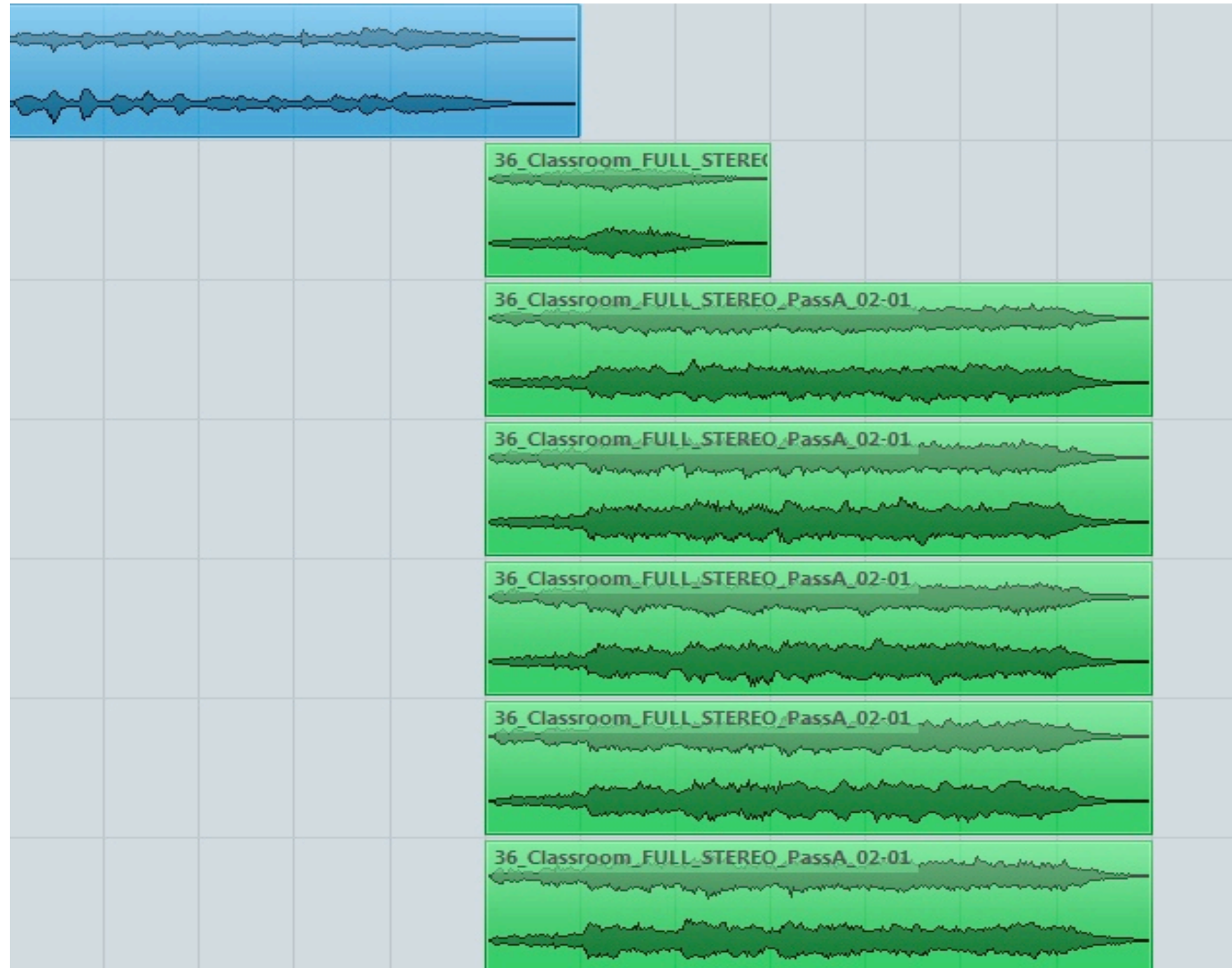
**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

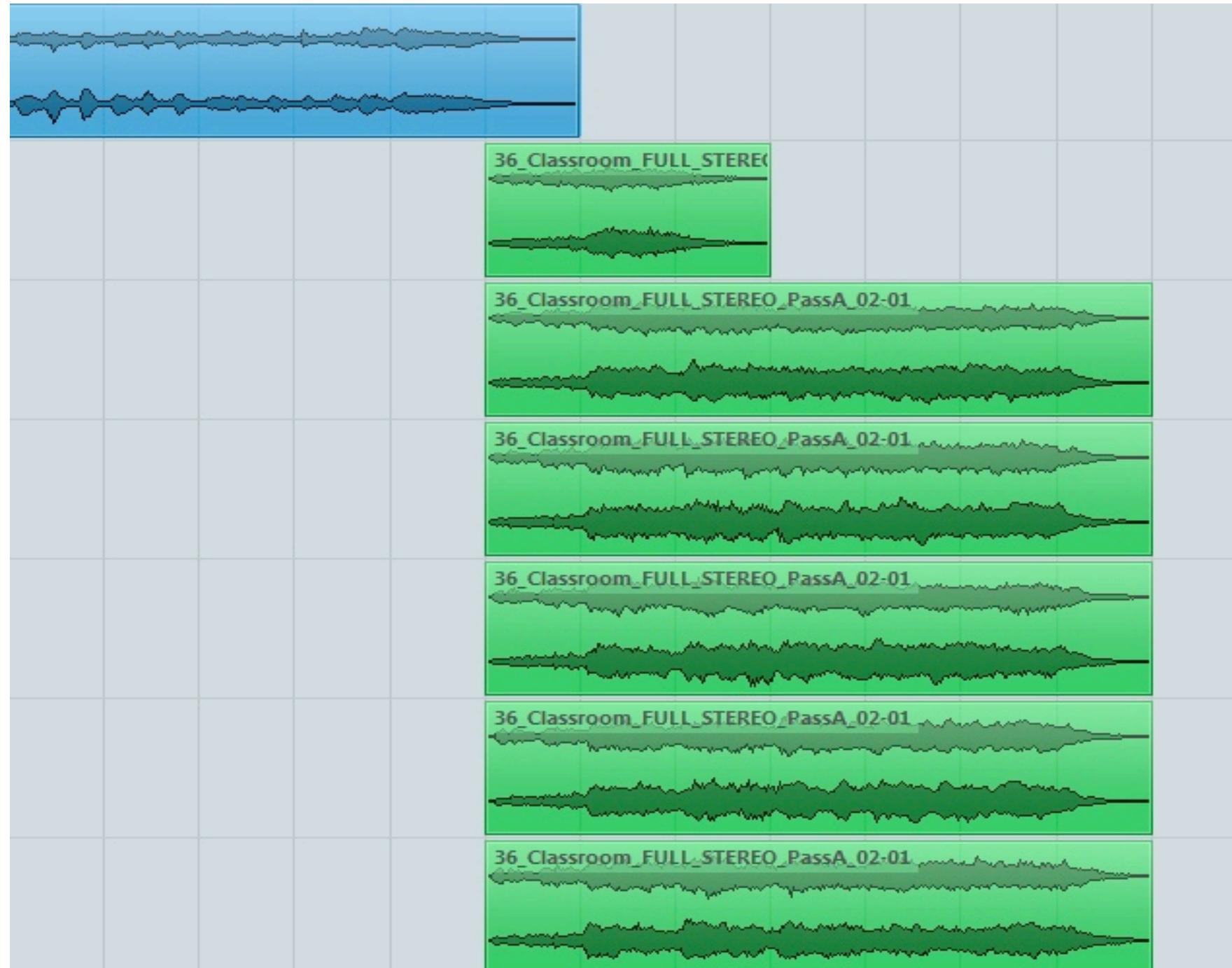
**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

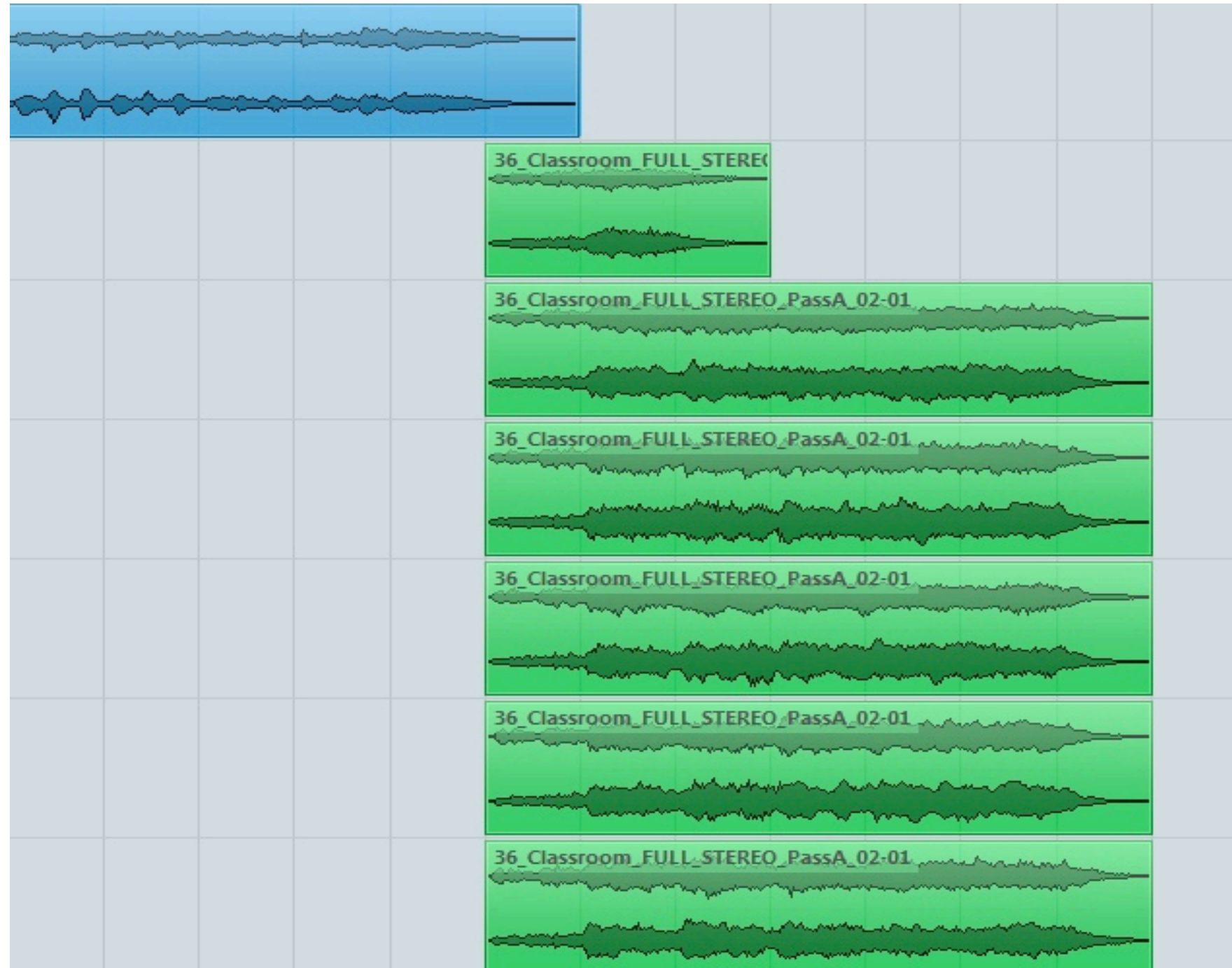
**D** minor – **D** Major

**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor

# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

**D** minor – **C** minor

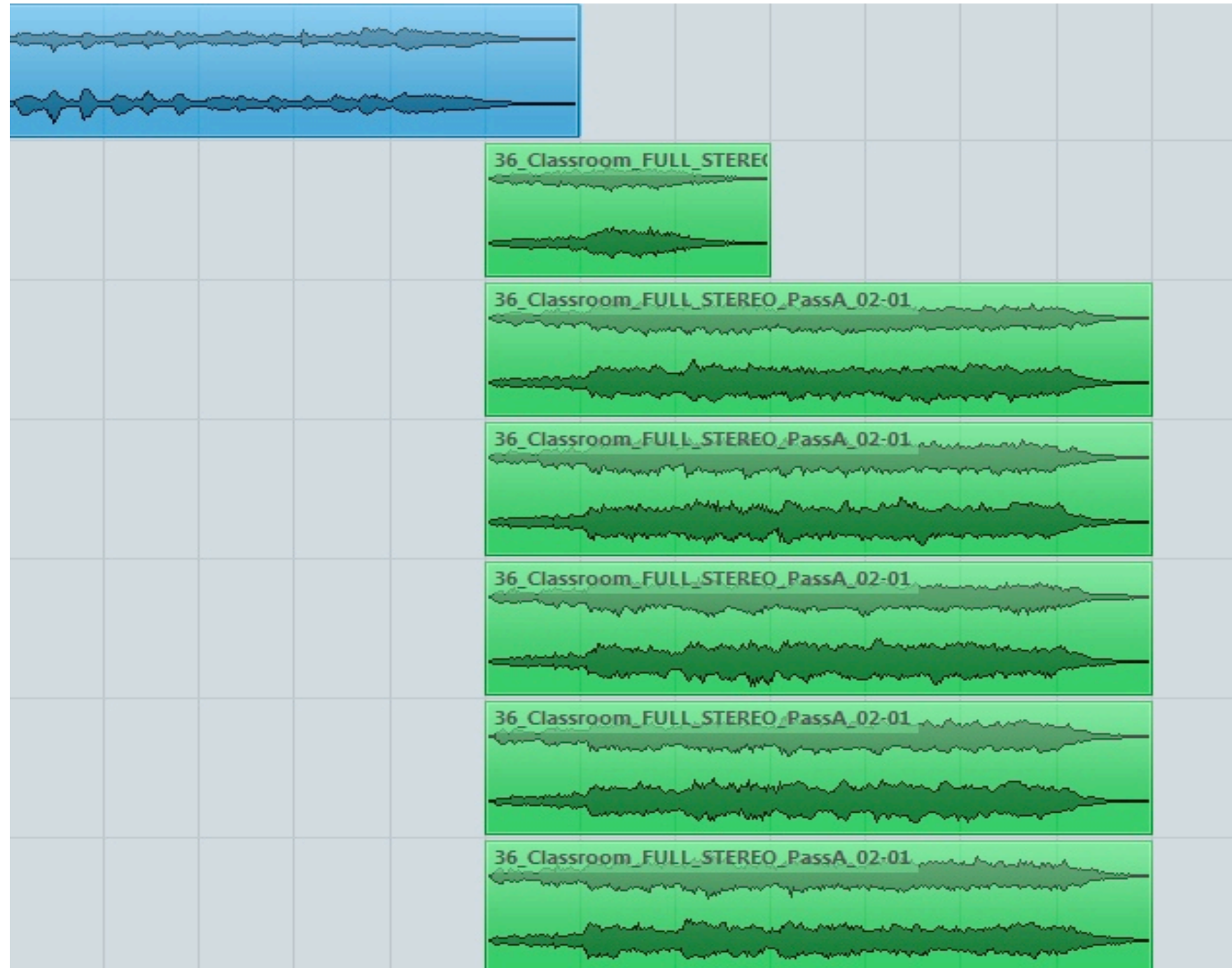
**D** minor – **E** minor

**D** minor – **G** minor





# Transitions Modulation Endings



## Ending Transitions

---

**D** minor (*default ending*)

---

**D** minor – **F** Major

---

**D** minor – **D** Major

---

**D** minor – **C** minor

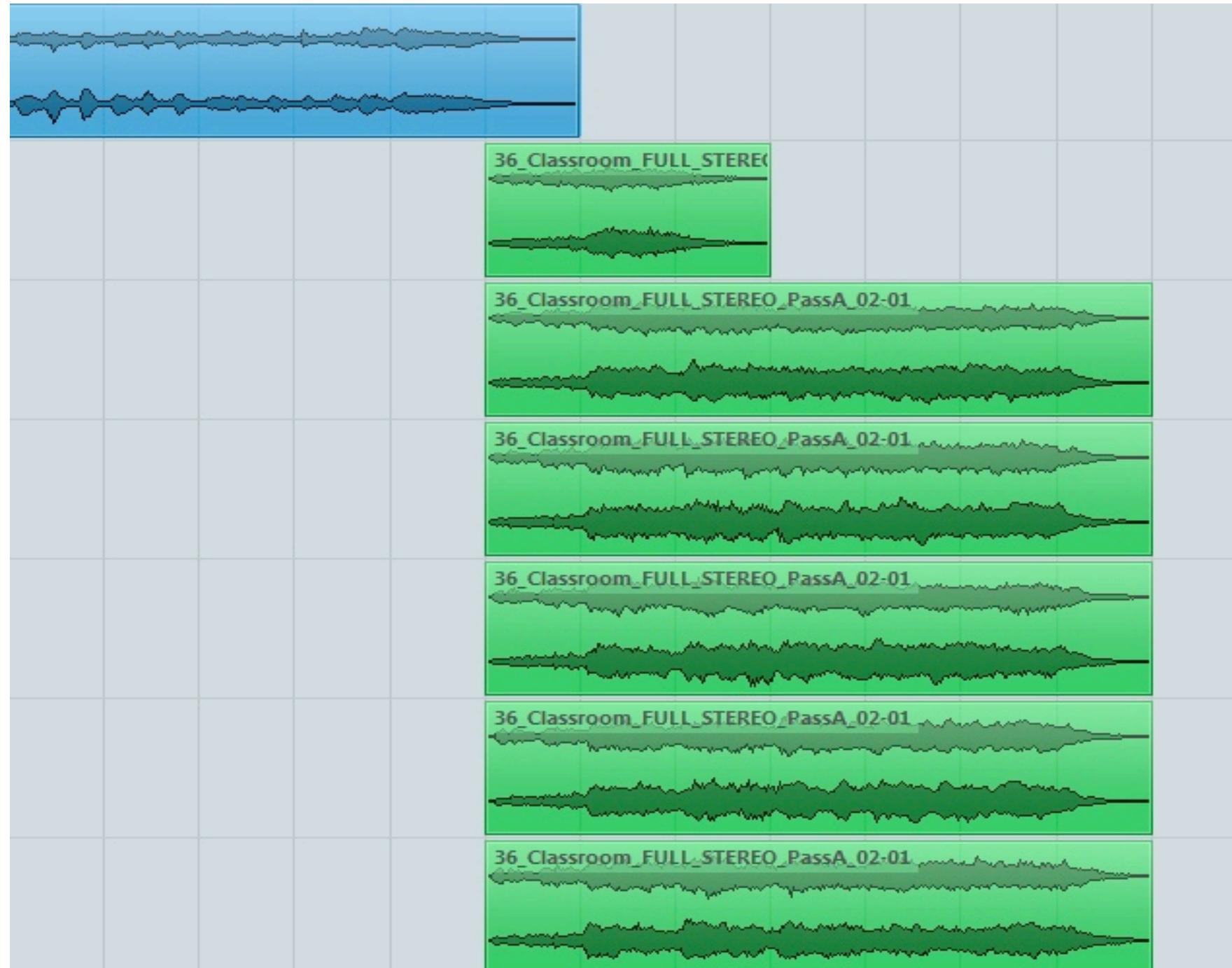
---

**D** minor – **E** minor

---

**D** minor – **G** minor

# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

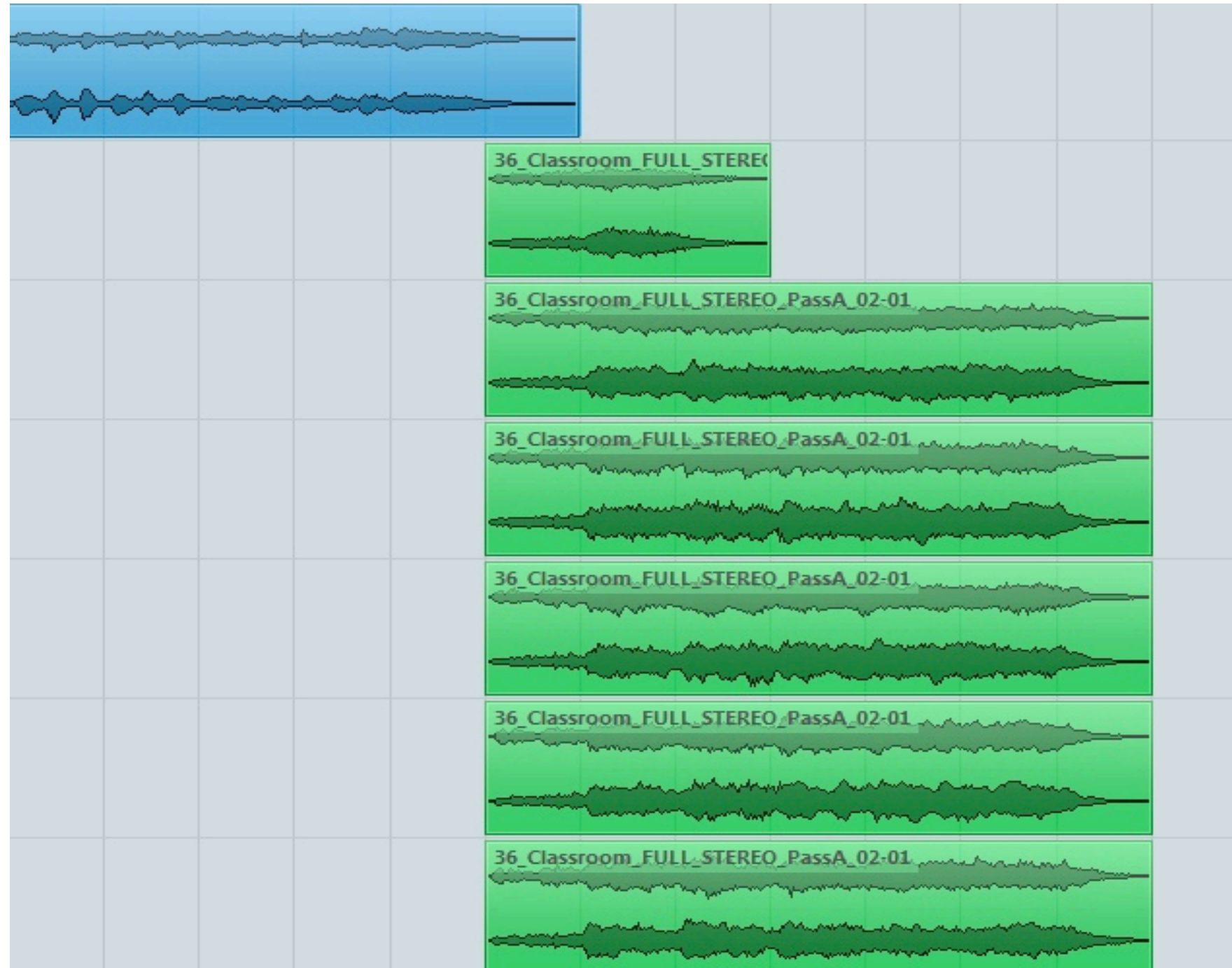
**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

---

**D** minor (*default ending*)

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**D** minor – **F** Major

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**D** minor – **D** Major

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**D** minor – **C** minor

---

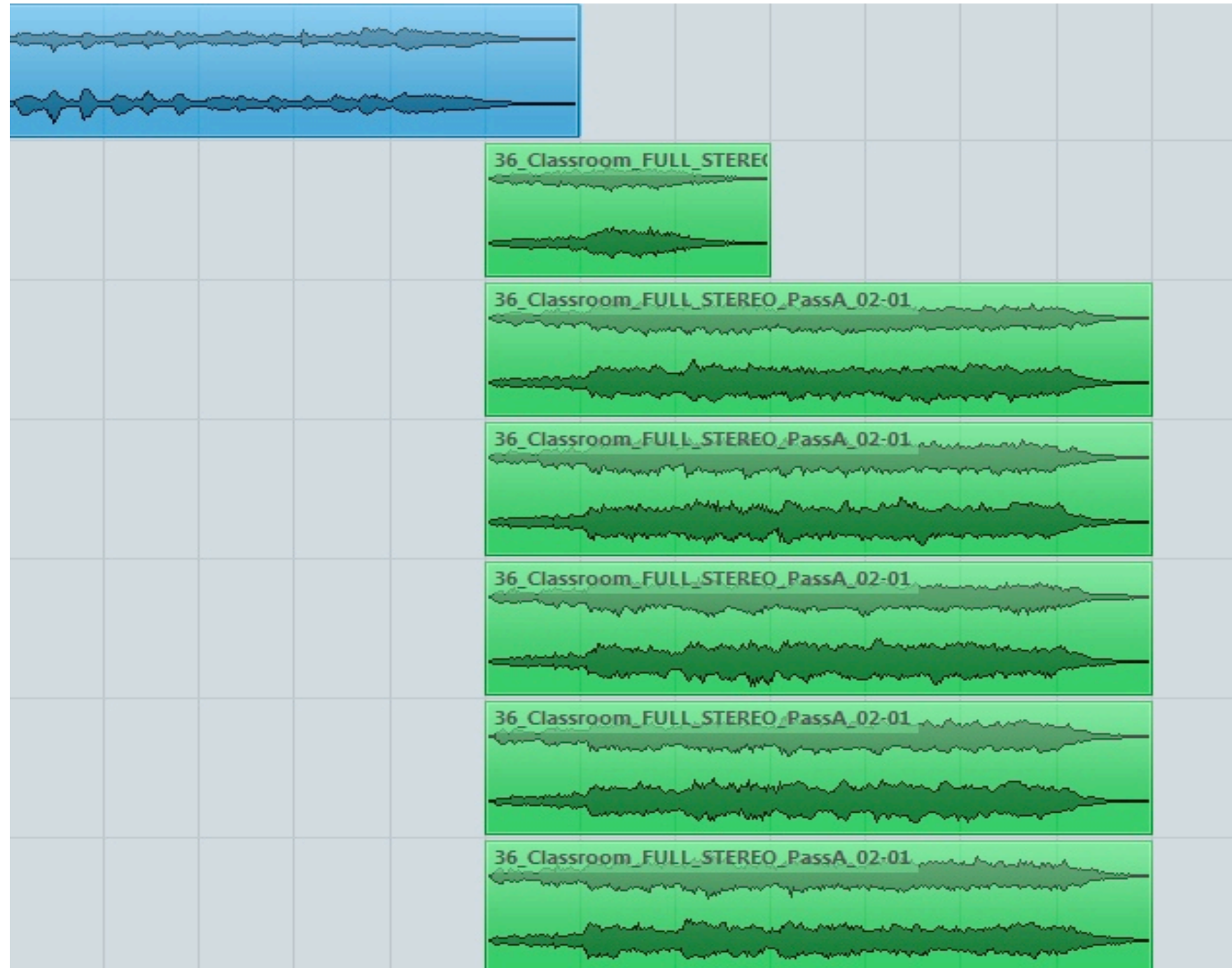
**D** minor – **E** minor

---

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

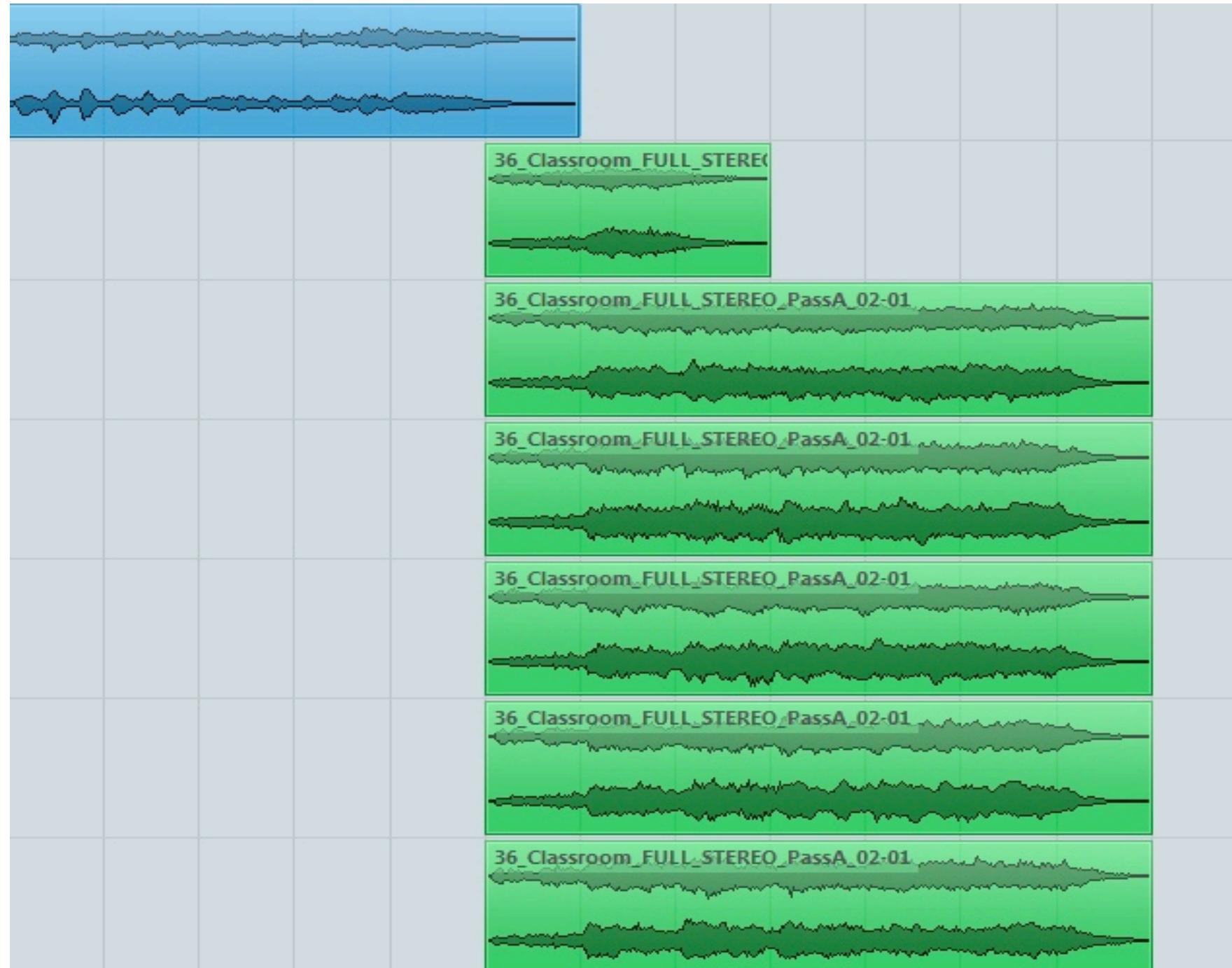
**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor



# Transitions Modulation Endings



## Ending Transitions

---

**D** minor (*default ending*)

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**D** minor – **F** Major

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**D** minor – **D** Major

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**D** minor – **C** minor

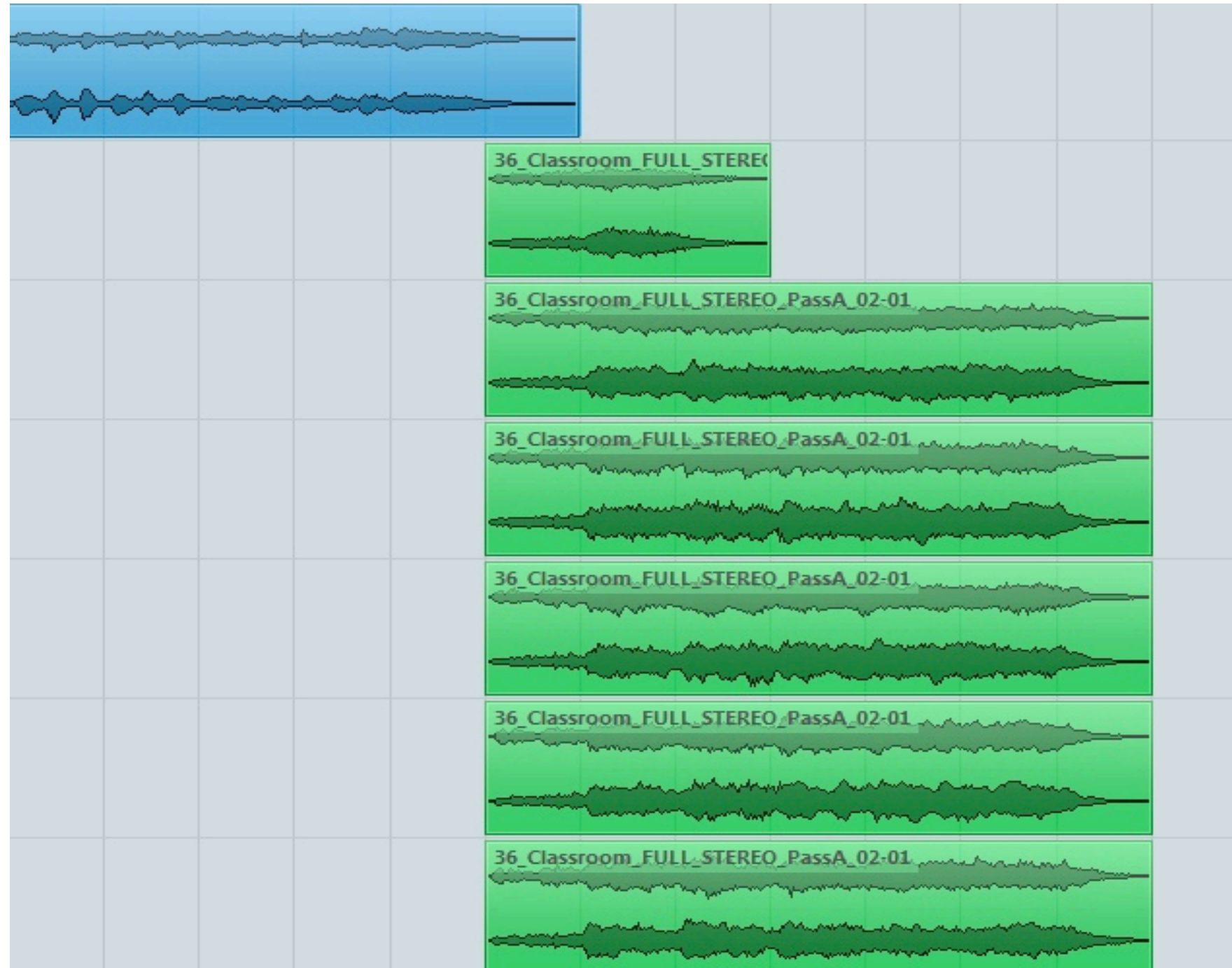
---

**D** minor – **E** minor

---

**D** minor – **G** minor

# Transitions Modulation Endings



## Ending Transitions

**D** minor (*default ending*)

**D** minor – **F** Major

**D** minor – **D** Major

**D** minor – **C** minor

**D** minor – **E** minor

**D** minor – **G** minor





# Music Scripting

Game  
Triggers

Logic  
Scripts

Music

mx\_Chapter2\_common.bank

Sounds:

# /	Name	Vol	Pan	Group	Hide	Voice Limit	Smart Pan	Looping	Use
●●	----- AEM CALLS -----	0	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes	0
●●	mx_Default_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Incendio_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	mx_Avis_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	mx_EngorgioReducio_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	mx_Aparecium_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	mx_Test_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Base	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Active	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_IncendioIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_AvisIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_ApareciumIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_EngorgioReducioIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_EndIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Dragon_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Dragon_End	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_Silence	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_End	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_testEnd	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_trap	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_tombTestStart	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	mx_statueComplete	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	----- LOGIC -----	0	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	underscore_start	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes	0
●●	underscore_loop_logic	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	underscore_end	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	underscore_stop	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	incantation_loop_logic	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	incantation_restart	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	incantation_end	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	dragon_loop_logic	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	dragon_end	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	test_loop_logic	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	test_reset	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	test_end	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	reset_underscore_registers	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	----- MUSIC SECTIONS -----	0	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0
●●	Underscore A Section	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	Underscore Mod Section	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0
●●	Underscore Bridge Section	120	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0

Sound Properties

Name: underscore\_loop\_logic Group: MUSIC

Vol: 120 Pan: 0 Smart pan

☐ Voice limit ☒ Hide Looping: calc (?No?)

Instance limit mode: Stop oldest Limit: 1

User 1: 0 User 2: 0

User 3: 0 User 4: 0

User 5: 0 User 6: 0

User 7: 0 User 8: 0

User 9: 0 User 10: 0

User 11: 0 User 12: 0

Comment:

Grain

- Marker (0)
- Loop Start
- ? Test Register (global reg 1 = 1)
- + Branch to Child Sound (26:underscore\_end)
- ? Test Register (global reg 16 = 1)
- + Branch to Child Sound (26:underscore\_end)
- ? Test Register (global reg 16 = 2)
- + Branch to Child Sound (27:underscore\_stop)
- Null
- ? Test Register (global reg 22 = 1)
- + Branch to Child Sound (45:Incantation Incendio)
- ? Test Register (global reg 22 = 2)
- + Branch to Child Sound (46:Incantation Avis)
- ? Test Register (global reg 22 = 3)
- + Branch to Child Sound (48:Incantation Aparecium)
- ? Test Register (global reg 22 = 4)
- + Branch to Child Sound (47:Incantation Engorgio & Reducio)
- Null
- ? Test Register (global reg 25 = 1)
- + Branch to Child Sound (44:Moment Dragon)
- ? Test Register (global reg 25 = 2)
- + Branch to Child Sound (-1)
- ? Test Register (global reg 54 = 3)
- + Branch to Child Sound (49:Test Trap)

'Underscore'  
Loop Logic  
Script



	A	B	C	D	E	F	G	H	I
4	RG1	End Current Music (Master)		0 0-1	1 = End All Music	YES (INT)		Wonderbook Common	
5	RG2	Open Angle		0 0-127	0 = Closed, 127 = Fully Open	YES (EXT)		Book of Spells Common	
6	RG3	Spread Index		0 0-127	0 = Closed, 12 = Spread 1, 25 = Spread 2, 38 = Spread 3, 50 = Spread 4, 63 = Spread 5, 76 = Spread 6	YES (EXT)		Underscore	
7	RG4	Rotation Angle		0 0-127	0 & 127 = Facing Camera, 63 = Facing User	NO		Moments	
8	RG5	User Movement		0 0-127	0 = No Movement, 127 = Erratic Movement	NO		Incantations	
9	RG6	Tilt Z		0 0-127	0 = No Z Tilt, 63 = Upside Down	NO		Menu	
10	RG7	Tilt Y		0 0-127	0 = No Y Tilt, 63 = Upside Down	NO		Anecdotes	
11	RG8	Key		0 0-24	0 = No Key Specified, 1-12 = Major Keys Starting with C (C,C#,D,Eb,etc), 13-24 = Minor Keys Starting with C	YES (INT)		Environments	
12	RG9	Time Signature		0 0-127	0 = No Time Signature Specified, See Time Signature Table for Reference	YES (INT)		Tests	
13	RG10	Tempo		0 0-127	0 = No Tempo Specified, 1 = 30BPM, 127 = 156BPM	YES (INT)		DEBUG	
14									
15	RG11	Current Chapter		0 0-7	0 = No Specified Chapter (1-5, 6 = Hall of Momentos, 7 = Conundrum Chapter)	YES (INT)		Value	Time Signature
16	RG12	Gesture Attempt		0 0-22	1 = Gesture Incorrect, See Spell Gesture Table for Reference	NO		0	Not Specified
17	RG13	Spell Active		0 0-1	0 = No Spell Active, 1 = Spell Active	NO		1- 9	1/4 - 9/4
18	RG14	Intensity		1 0-3	0 = Idle, 1 = Active, 2 = Fun, 3 = Mental	YES (INT)		10	6/4, 8, 16 in twos
19	RG15	Cancel mx_END		0 0-1	1 = Stop Music Fading Out and Fade Back In	ISH (INT)		11 - 19	1/8 - 9/8
20								20	6/4, 8, 16 in threes
21	RG16	Underscore Music Stopper		0 0-1	1 = Stop Underscore Music	YES (INT)		21 - 29	1/16 - 9/16
22	RG17	Channel 1&2 Volume		100 0-127	0 = Silent, 127 = Full Volume	YES (INT)			
23	RG18	Channel 3&4 Volume		0 0-127	0 = Silent, 127 = Full Volume	YES (INT)		Value	Spell Gesture
24	RG19	Channel 5&6 Volume		0 0-127	0 = Silent, 127 = Full Volume	YES (INT)		0	Not Specified
25	RG20	Prepare next piece of music		0 0-1	0 = False, 1 = New Stream, 2 = New Bank	YES (INT)		1	Gesture Incorrect
26	RG21	Next Section to prepare		0 0-N/A	0 = Default, 1 = Intro etc...	YES (INT)		2	Wingardium
27	RG22	Play Incantation		0 0-4	0 = No Incantation, 1 = Spell 1, 2 = Spell 2, 3 = Spell 3, 4 = Spell 4	YES (INT)		3	Lumos
28	RG23	Spell Spread		0 0-6	0 = Default, 1 = Spell 1, 2 = Spell 2, 3 = Spell 3, 4 = Spell 4	YES (INT)		4	Alohomora
29	RG24	Current playing section		0 0-N/A	0 = No underscore / moment / incantation playing	YES (INT)		5	Aguamenti
30	RG25	Moments transition trigger		0 0-N/A	0 = No Moments Triggered	YES (INT)		6	Incendio
31								7	Avis
32	RG26	Moment Music Stopper		0 0-1	1 = Stop Moment Music	YES (INT)		8	Aparecium
33	RG27	Channel 1&2 Volume		0 0-127	0 = Silent, 127 = Full Volume	YES (INT)		9	Engorgio
34	RG28							10	Reductio
35	RG29							11	Defodio
36								12	Reparo
37	RG30	Incantation Music Stopper		0 0-1	1 = Stop Incantation Music	YES (INT)		13	Scourgify
38	RG31	Channel 1&2 Volume		127 0-127	0 = Silent, 127 = Full Volume	YES (INT)		14	Protego
39								15	Accio
40	RG32	Menu Music Stopper		0 0-1	1 = Stop Menu Music	YES (INT)		16	Diffindo
41	RG33	Channel 1&2 Volume		127 0-127	0 = Silent, 127 = Full Volume	YES (INT)		17	Impedimenta
42	RG34	Current playing section		0 0-N/A	0 = No Menu Music Playing	YES (INT)		18	Duro
43	RG35							19	Expelliarmus
44	RG36							20	Reducto
45								21	Stupefy
46	RG37	Anecdote Music Stopper		0 0-1	1 = Stop Anecdote Music	NO		22	Expecto Patronum
47	RG38	Don't play again section		127 0-127	0 = Silent, 127 = Full Volume	NO			
48	RG39	Volume		0 0-127		YES			
49	RG40	Activity Complete		0 0-1	1 = Activity Complete (Play nice ending)	YES			
50	RG41	Anecdote End		0 0-127		NO			
51	RG42	Spread 4 Updatable 2		0 0-127		NO			
52	RG43	Spread 4 Updatable 3		0 0-127		NO			
53									
54	RG44	Environment Music Stopper		0 0-1	1 = Stop Environment Music	NO			
55	RG45	Channel 1&2 Volume		127 0-127	0 = Silent, 127 = Full Volume	NO			
56	RG46	Channel 3&4 Volume		127 0-127	0 = Silent, 127 = Full Volume	YES			
57	RG47	Channel 5&6 Volume		127 0-127	0 = Silent, 127 = Full Volume	YES			
58	RG48	Next section to prepare		0 0-127		NO			
59	RG49	Current Playing section		0 0-127		NO			

# Lessons learnt from implementation

*Don't underestimate the tools you have available*

*Aim high and scale back if necessary*

*Can system handle Tempo & Time Signature changes within music cues?*

*Know your limitations well in advance – streaming bandwidth, etc*

*Make sure you have all the debug information available*

7/10



# Composition

*Three hours of music*

*Two hours recorded live orchestra*

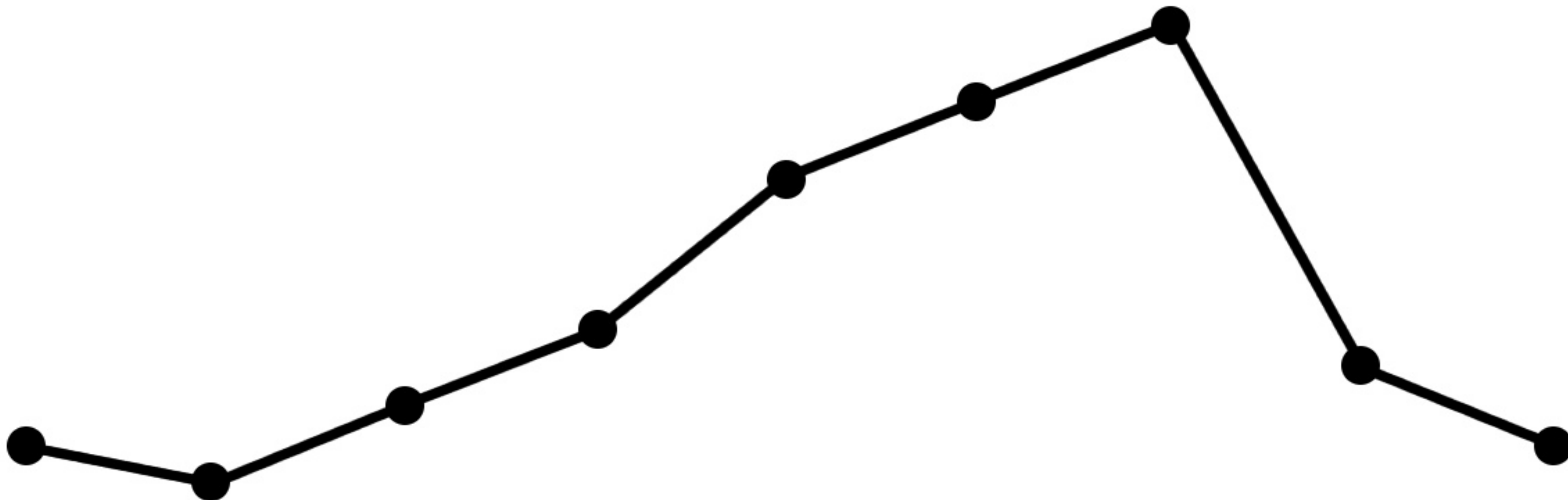
*Thirty minutes sample based*

*Many short 'stingers'*

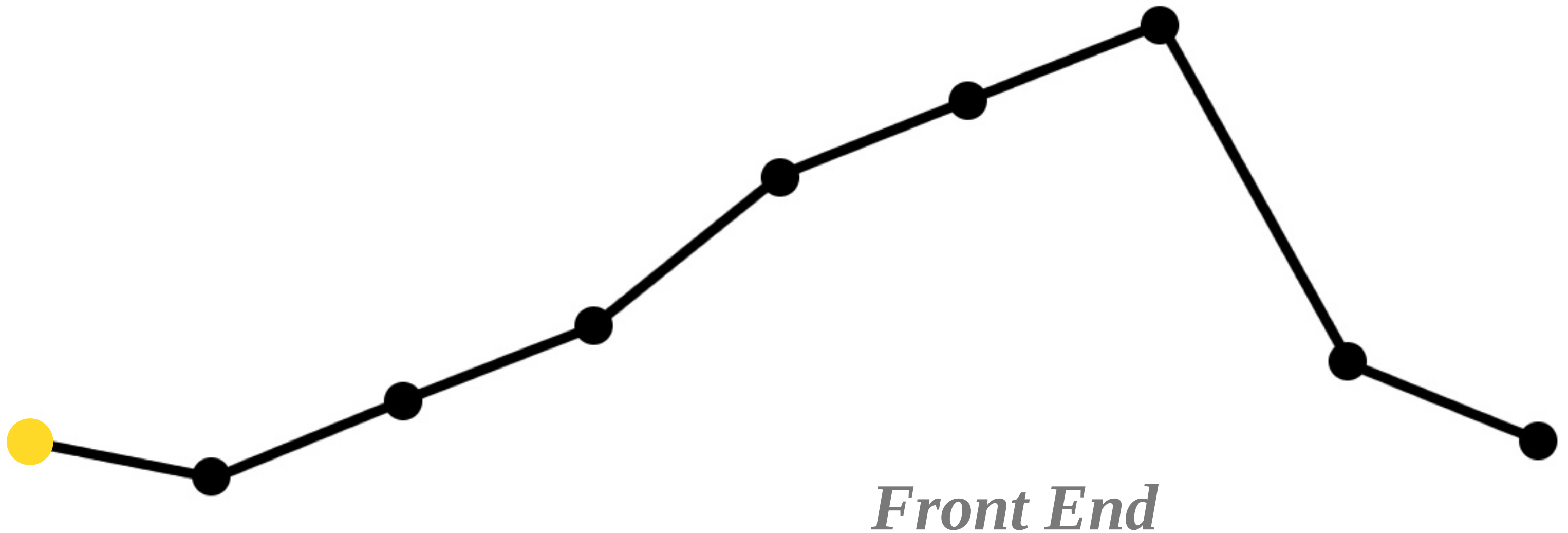
*Dynamics and tone followed book*



# Music Dynamics Book

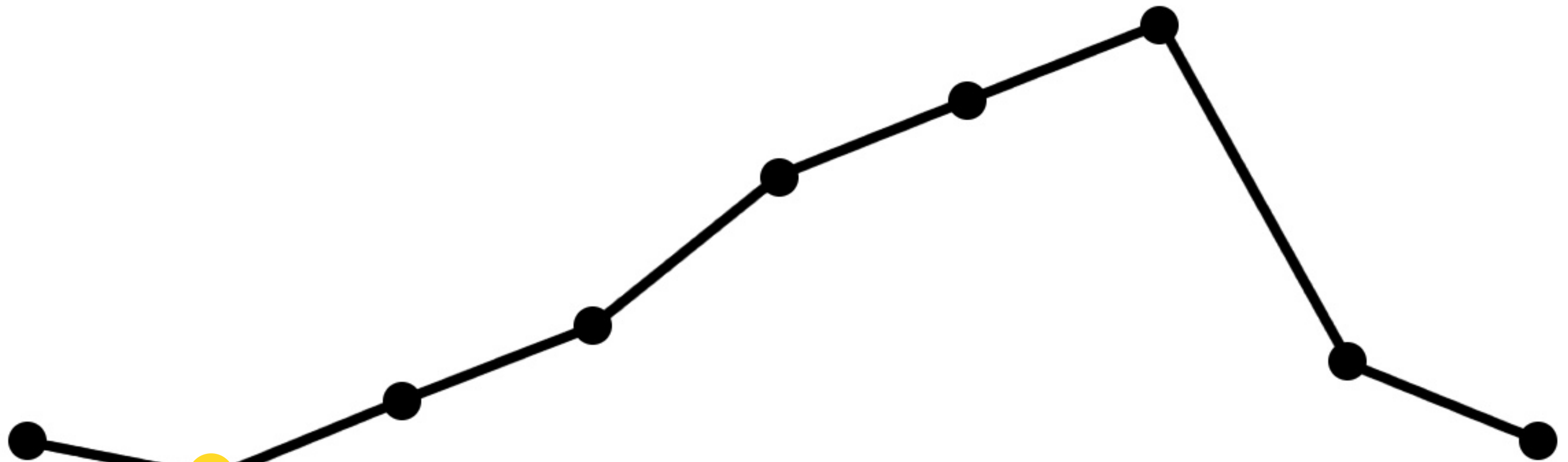


# Music Dynamics Book





# Music Dynamics Book



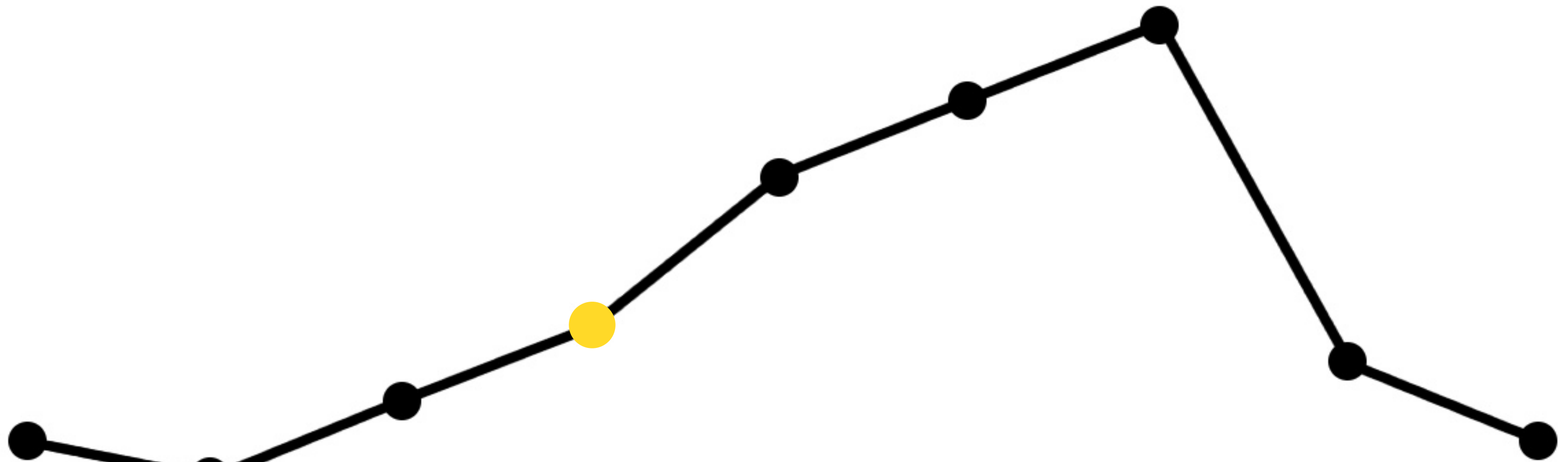
*Opening*

# Music Dynamics Book



*Chapter 1*

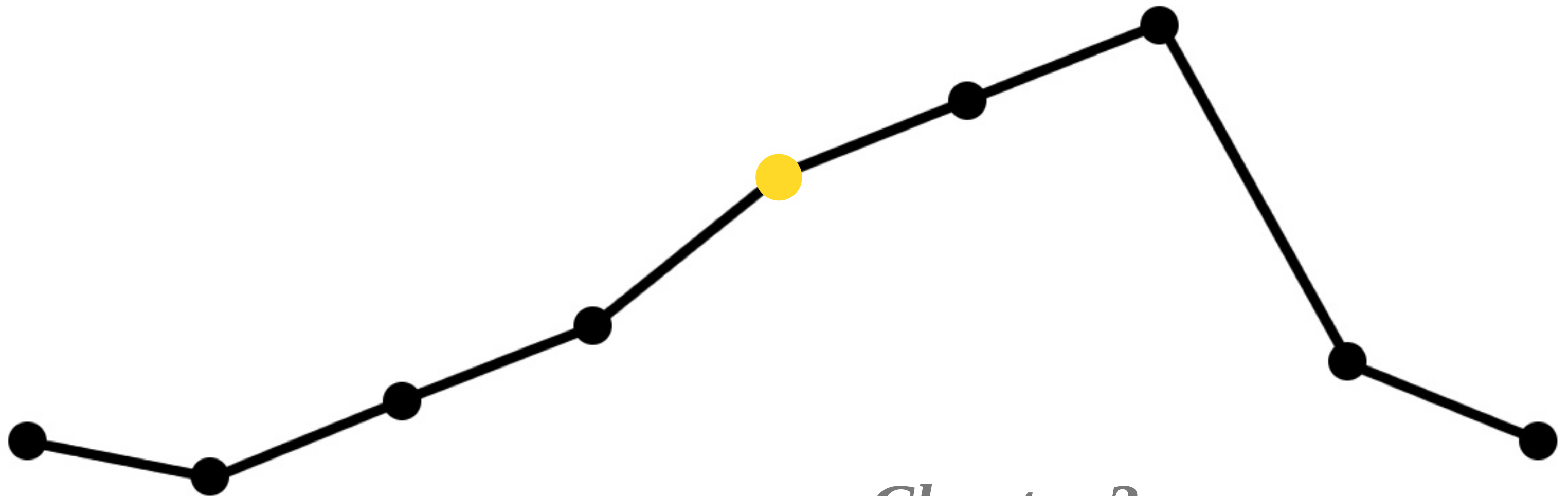
# Music Dynamics Book



*Chapter 2*

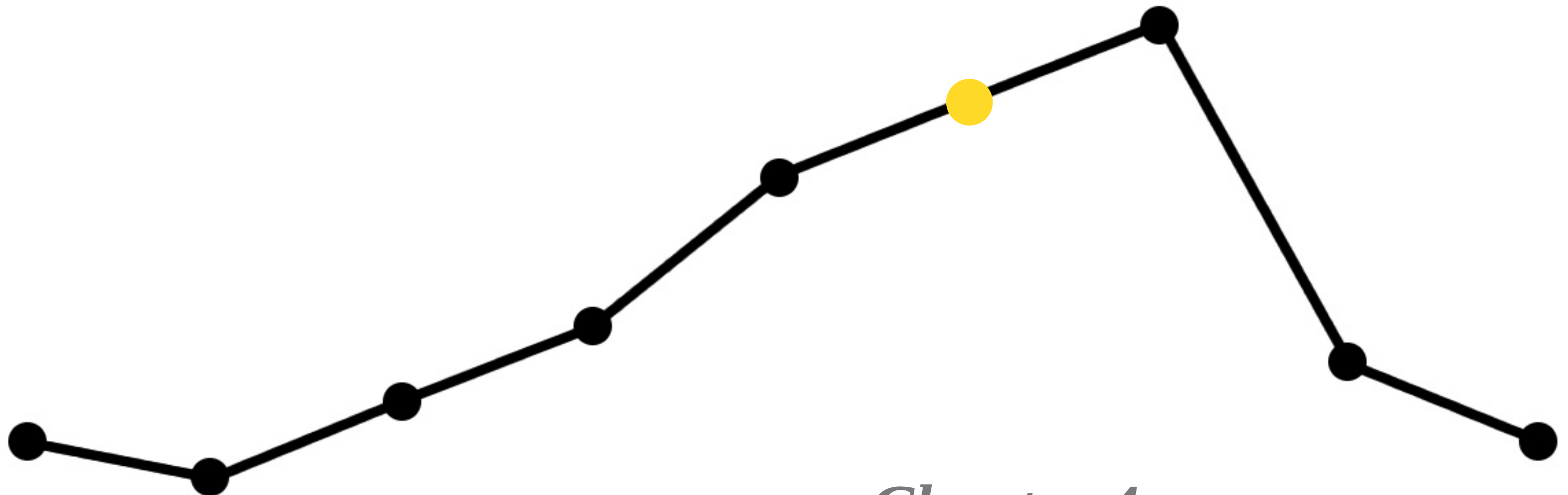


# Music Dynamics Book



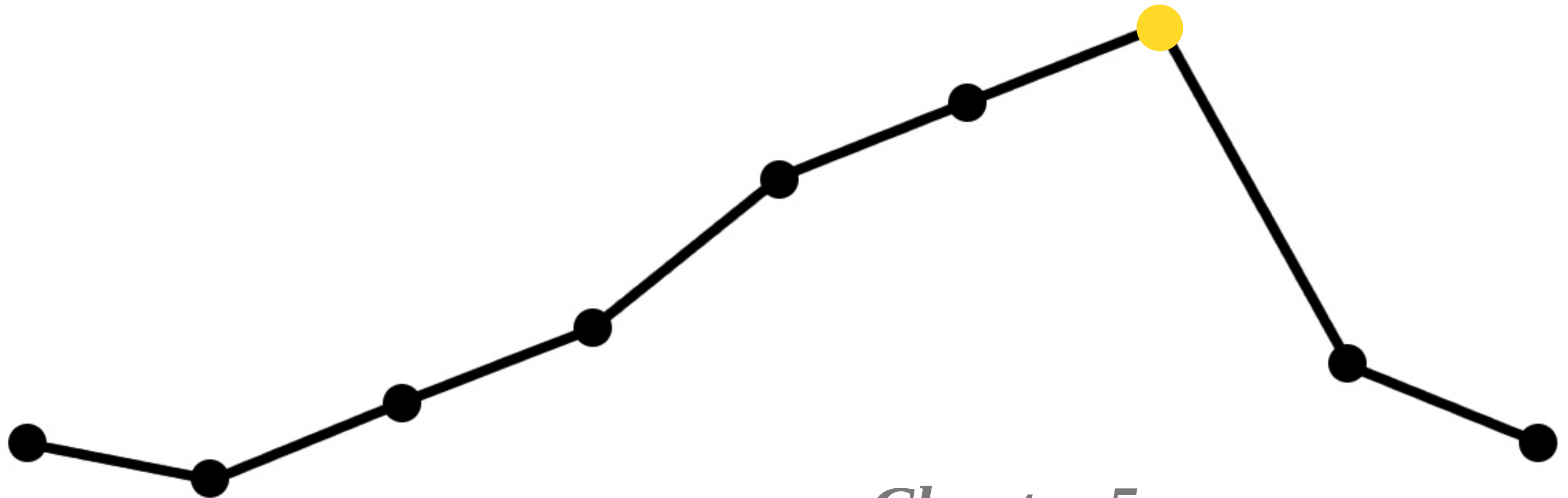
*Chapter 3*

# Music Dynamics Book



*Chapter 4*

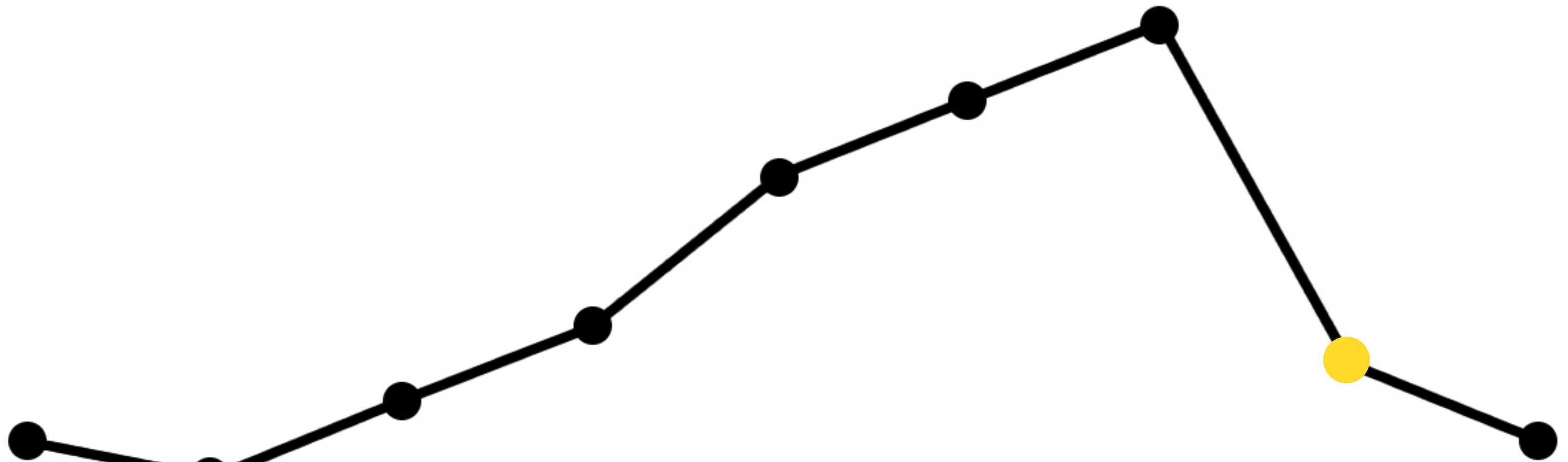
# Music Dynamics Book



*Chapter 5*

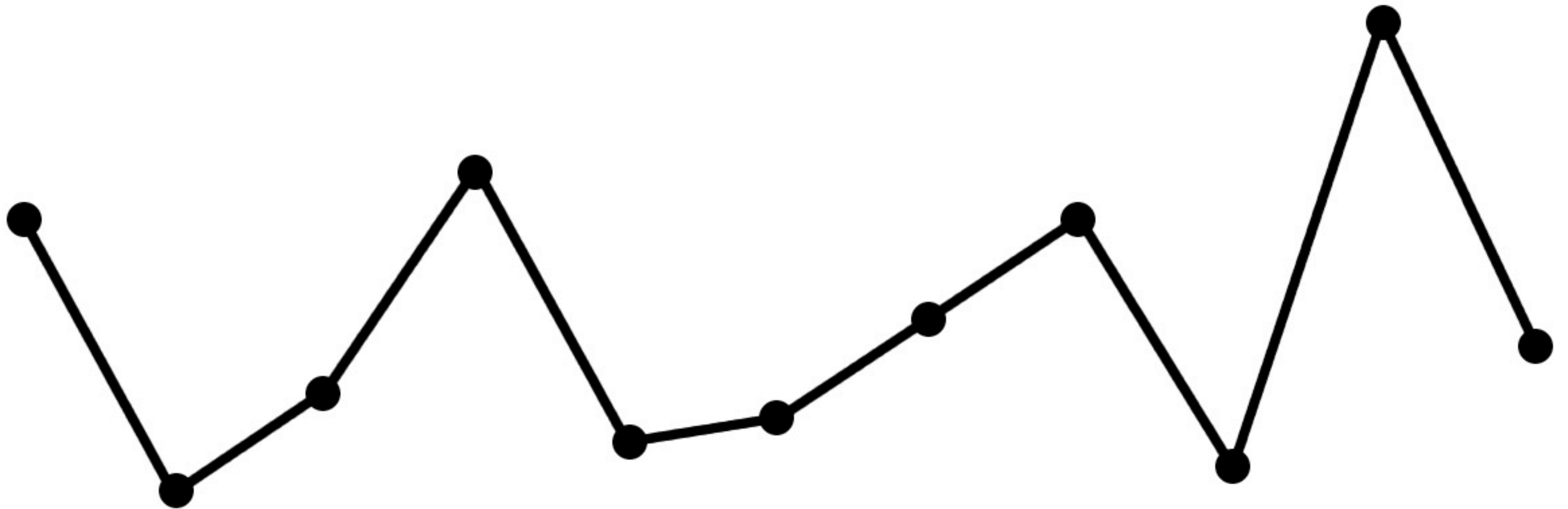


# Music Dynamics Book

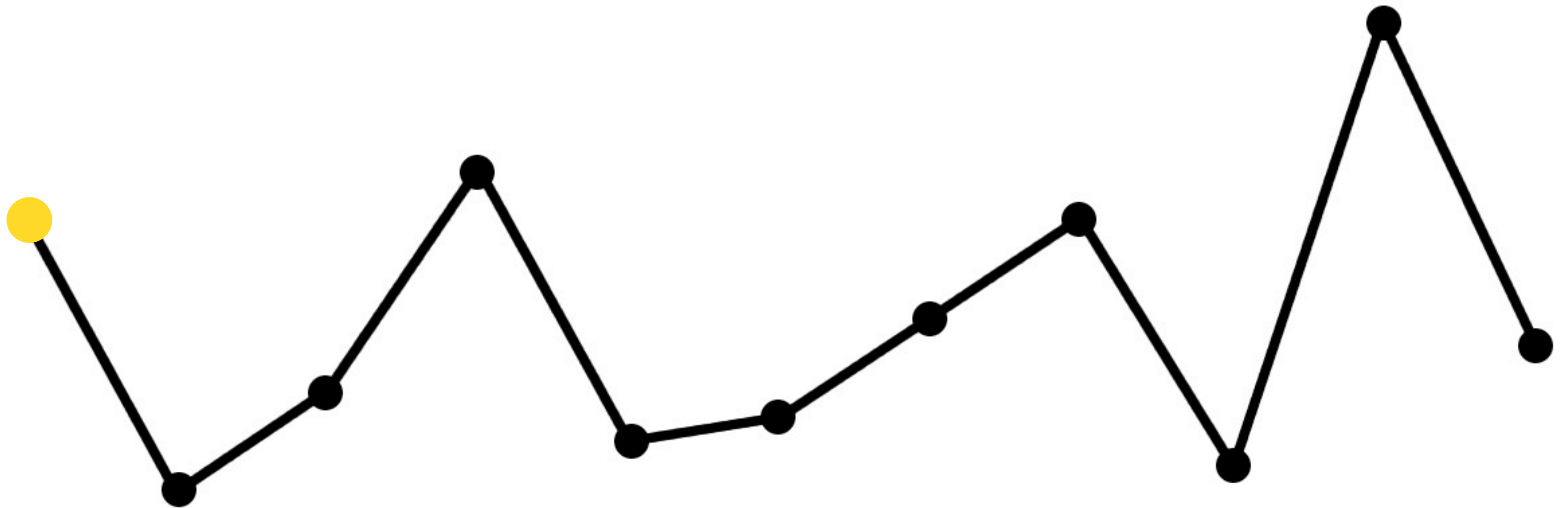


*Mementoes Chapter*

# Music Dynamics Spread



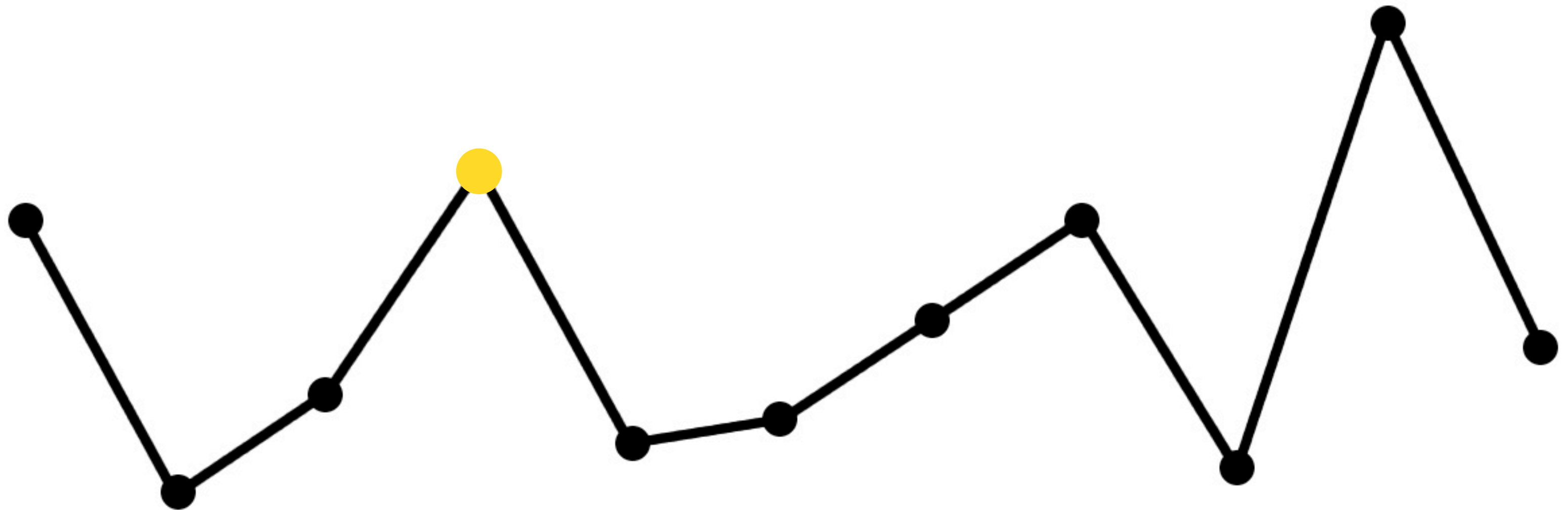
# Music Dynamics Spread



*Opening Reveal*



# Music Dynamics Spread

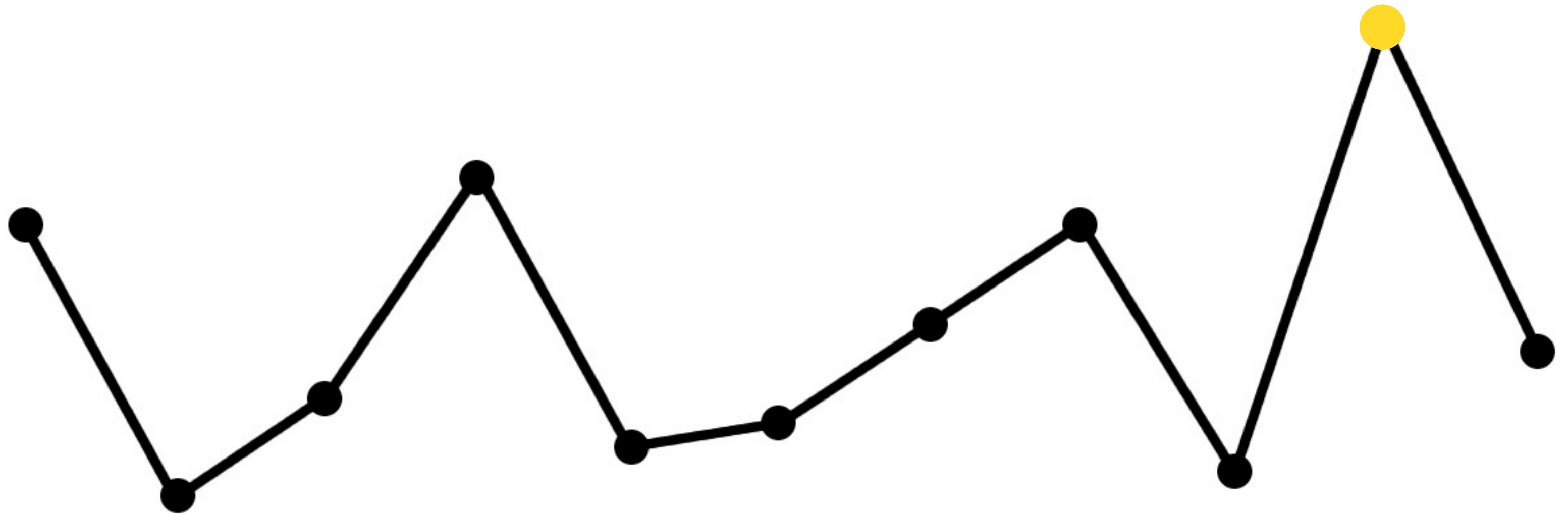


*Incantation Reveal*

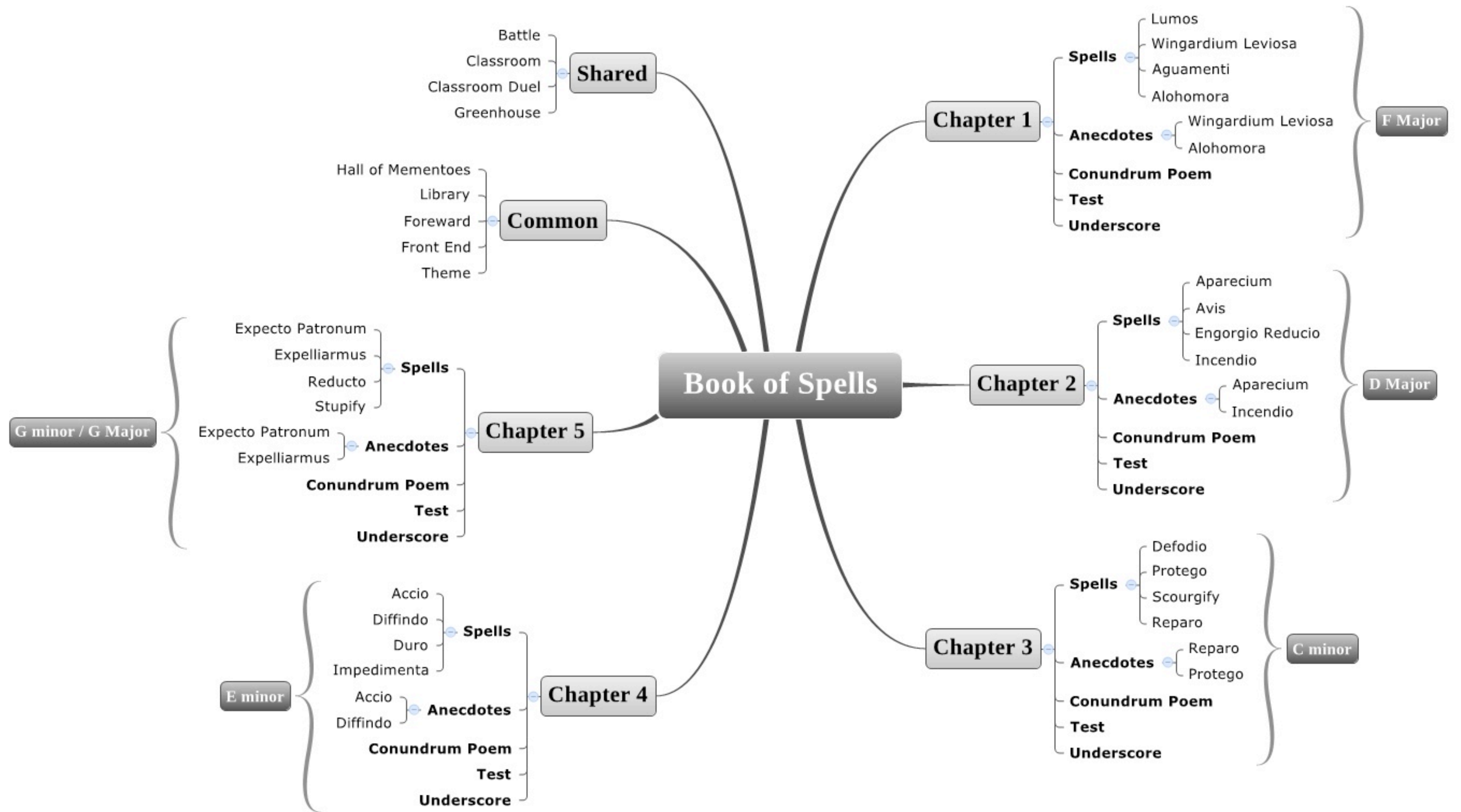
# Music Dynamics Spread



# Music Dynamics Spread

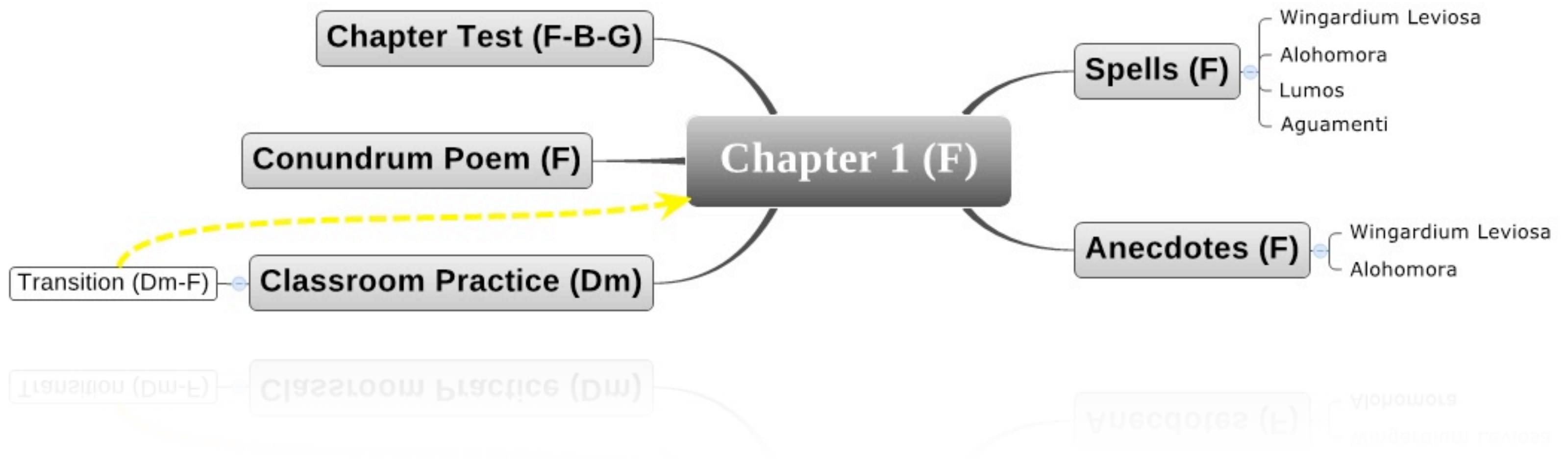


*Spell Test*





# Chapter 1 Example



# Key Structures & Key Colours

Key structures influenced by ‘Key Colour’ theories

Each chapter based around one dominant key, but has modulation within cues

## Chapter 1

*(F Major)*



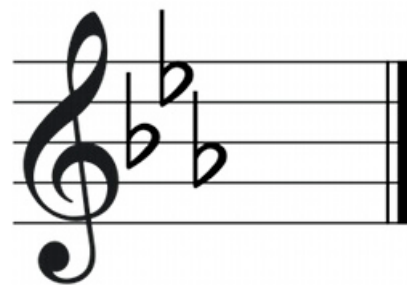
## Chapter 2

*(D Major)*



## Chapter 3

*(C minor)*



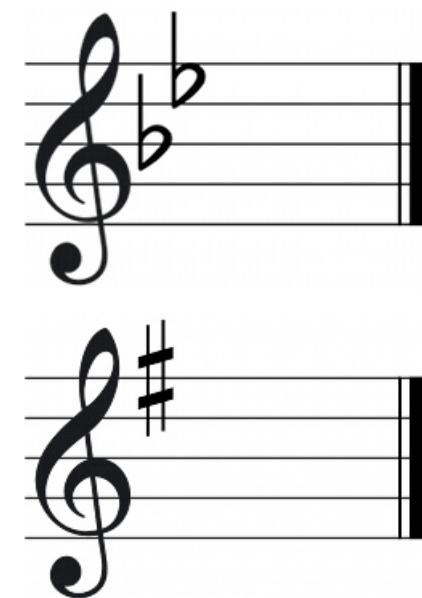
## Chapter 4

*(E minor)*



## Chapter 5

*(G minor / G Major)*



# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



Extended brass,  
but still no tuba



Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



Extended brass,  
but still no tuba



Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality



# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



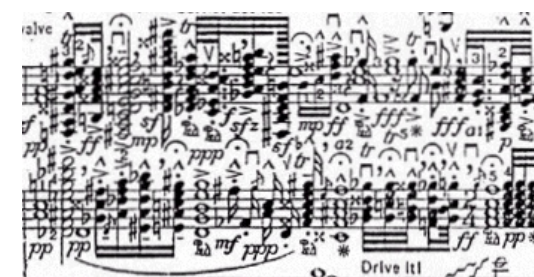
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Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

# Orchestration



Doubling & Solos



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Neapolitan & French 6ths



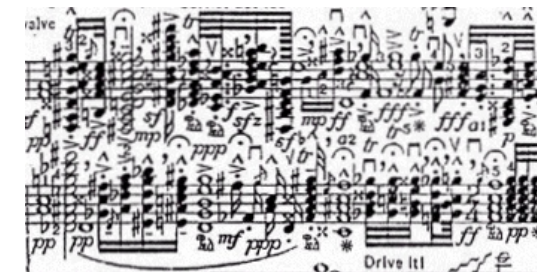
Extended brass,  
but still no tuba



Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



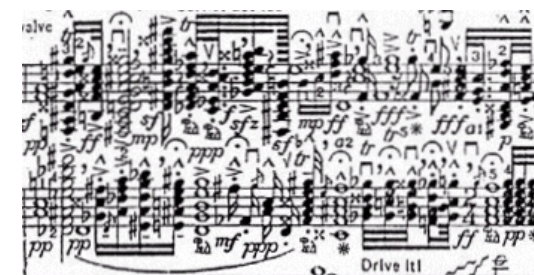
Extended brass,  
but still no tuba



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Dense harmonies, extensions,  
ambiguity



Bitonality



# Orchestration



Doubling & Solos



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Neapolitan & French 6ths



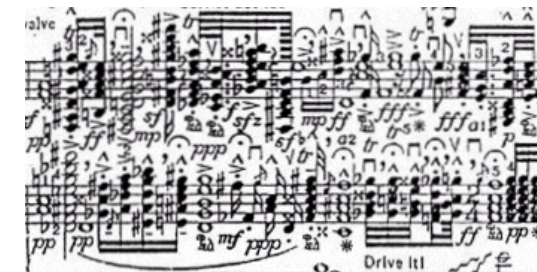
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Dense harmonies, extensions,  
ambiguity



Bitonality



# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



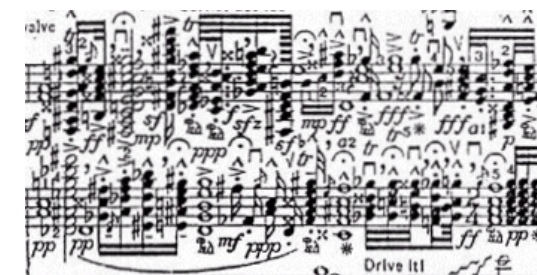
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Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



Extended brass,  
but still no tuba



Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



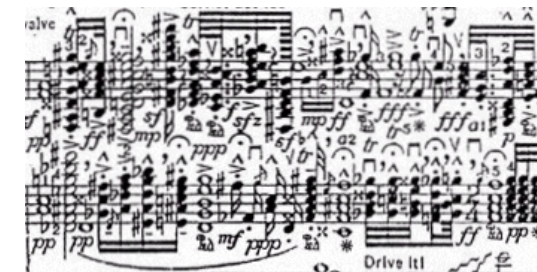
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Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality



# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



Extended brass,  
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Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality



# Orchestration



Doubling & Solos



No tuba or trombone



Neapolitan & French 6ths



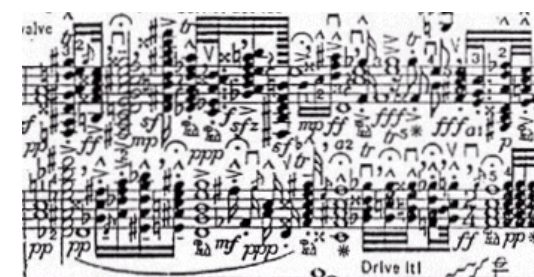
Extended brass,  
but still no tuba



Tuba arrives



Large brass section. Un-pitched percussion



Dense harmonies, extensions,  
ambiguity



Bitonality

Underscore - Arrange

Inspector Preferences Settings Auto Zoom Automation Flex Set Locators Repeat Section Crop Split by Playhead

Bounce Regions Bounce Colors Notes Lists Media

MIDI Thru Quantize: off (3840) Q-Swing: Loop: Transposition: Delay: Velocity: Dynamics: Gate Time: Clip Length: Score: Advanced Quantization

Idea 2 Icon: Core Audio: Audio 1 MIDI Channel: 1 Freeze Mode: Pre Fader Q-Reference: Flex Mode: Off

Setting EQ Inserts Sends I/O Off Off

Mixer Sample Editor Piano Roll Score Hyper Editor

01:00:03:01.41 1 1 1 1 105.0000 4/4 No In CPU 2 2 2 103. 83 2 1 1 551 /16 1 C-2 OFF

Global Tracks

Marker Create From Regions Alternative: 1

Signature 4 F 4

Chord

Tempo 130 90

Sections

Yellow is 'Intro'

Red is 'Active' Layer

Green is 'Base' Layer

Purple is 'Incantation' Layer

Intro A Section / Aguamenti B Section / Alohomora C Section / Wingardium Bridge D Section / Lumos Outro

Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute Flute 1 / Piccolo Flute

Oboe 1 Oboe 1 Oboe 1 Oboe 1 Oboe 1 Oboe 1 Oboe 1

Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais Oboe 2 / Cor Anglais

Clarinet 1 Clarinet 1 Clarinet 1 Clarinet 1 Clarinet 1 Clarinet 1 Clarinet 1

Clarinet 2 Clarinet 2 Clarinet 2 Clarinet 2 Clarinet 2 Clarinet 2 Clarinet 2

Bassoon 1 Bassoon 1 Bassoon 1 Bassoon 1 Bassoon 1 Bassoon 1 Bassoon 1

Bassoon 2 Bassoon 2 Bassoon 2 Bassoon 2 Bassoon 2 Bassoon 2 Bassoon 2

Woodwind Tut... Woodwind Tut... Woodwind Tut... Woodwind Tut... Woodwind Tut... Woodwind Tut... Woodwind Tut...

Woodwind Maj... Woodwind Maj... Woodwind Maj... Woodwind Maj... Woodwind Maj... Woodwind Maj... Woodwind Maj...

Woodwind Min... Woodwind Min... Woodwind Min... Woodwind Min... Woodwind Min... Woodwind Min... Woodwind Min...

Woodwind Ton... Woodwind Ton... Woodwind Ton... Woodwind Ton... Woodwind Ton... Woodwind Ton... Woodwind Ton...

Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex...

Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex... Woodwind Tex...

Brass Low Long Brass Low Long Brass Low Long Brass Low Long Brass Low Long Brass Low Long Brass Low Long

Brass Low Short Brass Low Short Brass Low Short Brass Low Short Brass Low Short Brass Low Short Brass Low Short

Brass High Long Brass High Long Brass High Long Brass High Long Brass High Long Brass High Long Brass High Long

Brass High Short Brass High Short Brass High Short Brass High Short Brass High Short Brass High Short Brass High Short

Brass High Eff... Brass High Eff... Brass High Eff... Brass High Eff... Brass High Eff... Brass High Eff... Brass High Eff...

French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ...

French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ...

French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ... French Horns ...

Trumpet Long Trumpet Long Trumpet Long Trumpet Long Trumpet Long Trumpet Long Trumpet Long

Trumpet Short Trumpet Short Trumpet Short Trumpet Short Trumpet Short Trumpet Short Trumpet Short

Trumpet Effects Trumpet Effects Trumpet Effects Trumpet Effects Trumpet Effects Trumpet Effects Trumpet Effects

Trumpet Mutes Trumpet Mutes Trumpet Mutes Trumpet Mutes Trumpet Mutes Trumpet Mutes Trumpet Mutes

Trombones Lo... Trombones Lo... Trombones Lo... Trombones Lo... Trombones Lo... Trombones Lo... Trombones Lo...

Trombones Sh... Trombones Sh... Trombones Sh... Trombones Sh... Trombones Sh... Trombones Sh... Trombones Sh...

Trombones Eff... Trombones Eff... Trombones Eff... Trombones Eff... Trombones Eff... Trombones Eff... Trombones Eff...

Trombones M... Trombones M... Trombones M... Trombones M... Trombones M... Trombones M... Trombones M...

Tubas Long Tubas Long Tubas Long Tubas Long Tubas Long Tubas Long Tubas Long

Tubas Short Tubas Short Tubas Short Tubas Short Tubas Short Tubas Short Tubas Short

Tubas Effects Tubas Effects Tubas Effects Tubas Effects Tubas Effects Tubas Effects Tubas Effects

Tubas Mutes Tubas Mutes Tubas Mutes Tubas Mutes Tubas Mutes Tubas Mutes Tubas Mutes

Timpani Timpani Timpani Timpani Timpani Timpani Timpani

Snare Drum Snare Drum Snare Drum Snare Drum Snare Drum Snare Drum Snare Drum

Tambourine Tambourine Tambourine Tambourine Tambourine Tambourine Tambourine

Triangle Triangle Triangle Triangle Triangle Triangle Triangle

Cymbals Cymbals Cymbals Cymbals Cymbals Cymbals Cymbals

Bass Drum Bass Drum Bass Drum Bass Drum Bass Drum Bass Drum Bass Drum

Sticks Sticks Sticks Sticks Sticks Sticks Sticks

Percussion Percussion Percussion Percussion Percussion Percussion Percussion

Gong Gong Gong Gong Gong Gong Gong

Tubular Bells Tubular Bells Tubular Bells Tubular Bells Tubular Bells Tubular Bells Tubular Bells

Glockenspiel Glockenspiel Glockenspiel Glockenspiel Glockenspiel Glockenspiel Glockenspiel

Xylophone Xylophone Xylophone Xylophone Xylophone Xylophone Xylophone

Celesta Celesta Celesta Celesta Celesta Celesta Celesta

Harp Harp Harp Harp Harp Harp Harp

String Ensemble String Ensemble String Ensemble String Ensemble String Ensemble String Ensemble String Ensemble

Violin 1 Long Violin 1 Long Violin 1 Long Violin 1 Long Violin 1 Long Violin 1 Long Violin 1 Long

Violin 1 Short Violin 1 Short Violin 1 Short Violin 1 Short Violin 1 Short Violin 1 Short Violin 1 Short

Violins 1 Effects Violins 1 Effects Violins 1 Effects Violins 1 Effects Violins 1 Effects Violins 1 Effects Violins 1 Effects

Violins 2 Long Violins 2 Long Violins 2 Long Violins 2 Long Violins 2 Long Violins 2 Long Violins 2 Long

Violins 2 Short Violins 2 Short Violins 2 Short Violins 2 Short Violins 2 Short Violins 2 Short Violins 2 Short

Violins 2 Effects Violins 2 Effects Violins 2 Effects Violins 2 Effects Violins 2 Effects Violins 2 Effects Violins 2 Effects

Violas Long Violas Long Violas Long Violas Long Violas Long Violas Long Violas Long

Violas Short Violas Short Violas Short Violas Short Violas Short Violas Short Violas Short

Violas Effects Violas Effects Violas Effects Violas Effects Violas Effects Violas Effects Violas Effects

Violin Con Violin Con Violin Con Violin Con Violin Con Violin Con Violin Con

Cellos Long Cellos Long Cellos Long Cellos Long Cellos Long Cellos Long Cellos Long

Cellos Short Cellos Short Cellos Short Cellos Short Cellos Short Cellos Short Cellos Short

Cellos Effects Cellos Effects Cellos Effects Cellos Effects Cellos Effects Cellos Effects Cellos Effects

Double Basses... Double Basses... Double Basses... Double Basses... Double Basses... Double Basses... Double Basses...

Doubles Basse... Doubles Basse... Doubles Basse... Doubles Basse... Doubles Basse... Doubles Basse... Doubles Basse...

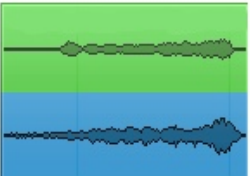
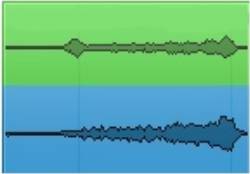
Double Bas Eff... Double Bas Eff... Double Bas Eff... Double Bas Eff... Double Bas Eff... Double Bas Eff... Double Bas Eff...



# Classroom Duel Chapter 3 & 5 Example

Chapter 3 Intro

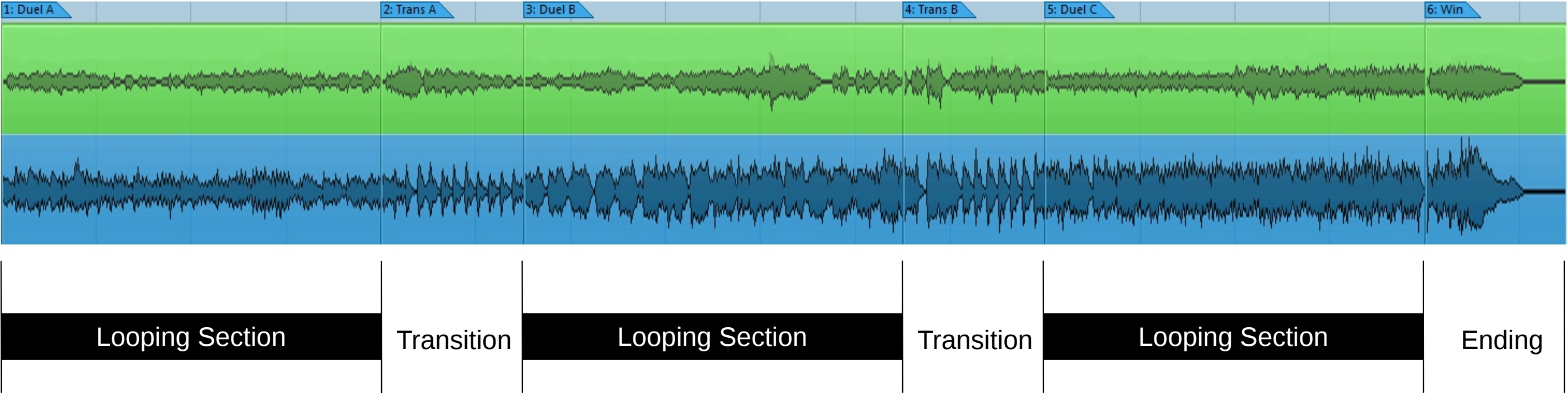
'C minor'



Chapter 5 Intro

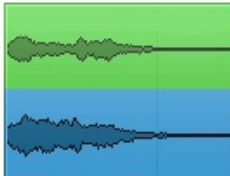
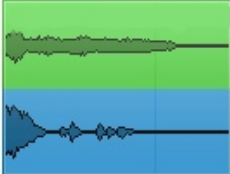
'G minor'

## Classroom Duel 'D minor'



Chapter 3 Outro

'C minor'



Chapter 5 Outro

'G minor'



Base Layer

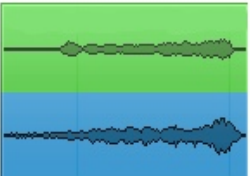
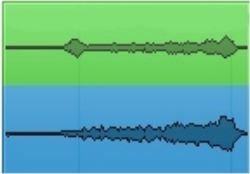


Active Layer

# Classroom Duel Chapter 3 & 5 Example

Chapter 3 Intro

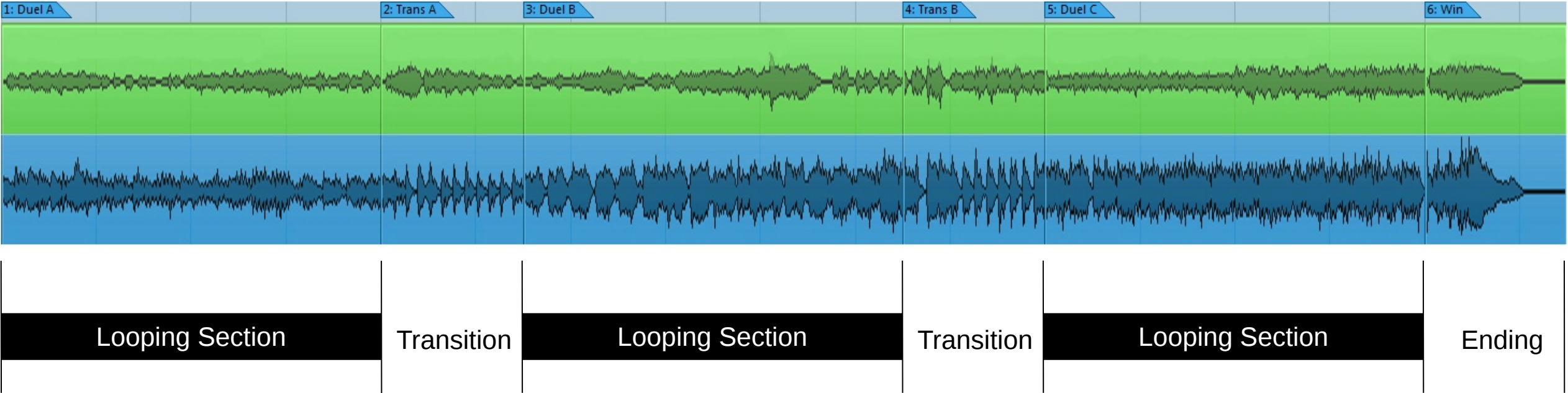
'C minor'



Chapter 5 Intro

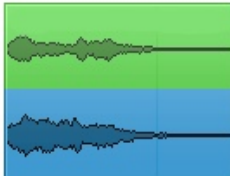
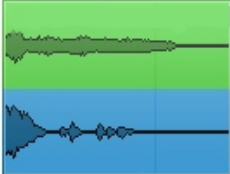
'G minor'

## Classroom Duel 'D minor'



Chapter 3 Outro

'C minor'



Chapter 5 Outro

'G minor'



Base Layer



Active Layer



## 61 - Environment Transitions

Book of Spells

Violin I

Violin II

Allegro  $\text{♩} = 120$

1 2 3 4 5 6

This block shows the first six measures of the 'Environment Transitions' section. It is written for Violin I and Violin II in 4/4 time, marked 'Allegro' with a tempo of 120 beats per minute. Measures 1-4 feature a sustained chord in the right hand and a moving line in the left hand, with a crescendo leading to a fortissimo (ff) dynamic in measure 4. Measures 5 and 6 are whole rests for both parts.

7 8 9 10

This block shows measures 7-10. Measures 7-9 continue the pattern from the previous block, with a crescendo leading to a fortissimo (ff) dynamic in measure 9. Measure 10 is a whole rest for both parts.

13 14 15 16 17 18

Vln. I

Vln. II

This block shows measures 13-18. Measures 13-15 feature a sustained chord in the right hand and a moving line in the left hand, with a crescendo leading to a fortissimo (ff) dynamic in measure 15. Measures 16-18 are whole rests for both parts.

19 20 21 22 23 24 25 26 27 28

Vln. I

Vln. II

This block shows measures 19-28. Measures 19-22 feature a sustained chord in the right hand and a moving line in the left hand, with a crescendo leading to a fortissimo (ff) dynamic in measure 22. Measures 23-24 are whole rests for both parts. Measures 25-28 feature a sustained chord in the right hand and a moving line in the left hand, with a crescendo leading to a fortissimo (ff) dynamic in measure 28.

Individual flourishes

## 61 - Environment Transitions

Book of Spells

Violin I

Violin II

Allegro  $\text{♩} = 120$

1 2 3 4 5 6

Vln. I

Vln. II

7 8 9 10

Vln. I

Vln. II

13 14 15 16 17 18

19 20 21 22 23 24 25 26 27 28

## Individual flourishes



## 61 - Environment Transitions

Book of Spells

Violin I

Violin II

Allegro  $\text{♩} = 120$

1 2 3 4 5 6

Vln. I

Vln. II

7 8 9 10

Vln. I

Vln. II

13 14 15 16 17 18

Vln. I

Vln. II

19 20 21 22 23 24 25 26 27 28

Individual flourishes





## 61 - Environment Transitions

Book of Spells

Violin I

Violin II

Allegro  $\text{♩} = 120$

1 2 3 4 5 6

Vln. I

Vln. II

7 8 9 10

Vln. I

Vln. II

13 14 15 16 17 18

19 20 21 22 23 24 25 26 27 28

## Individual flourishes



## 61 - Environment Transitions

Book of Spells

Violin I

Violin II

Allegro  $\text{♩} = 120$

1 2 3 4 5 6

7 8 9 10



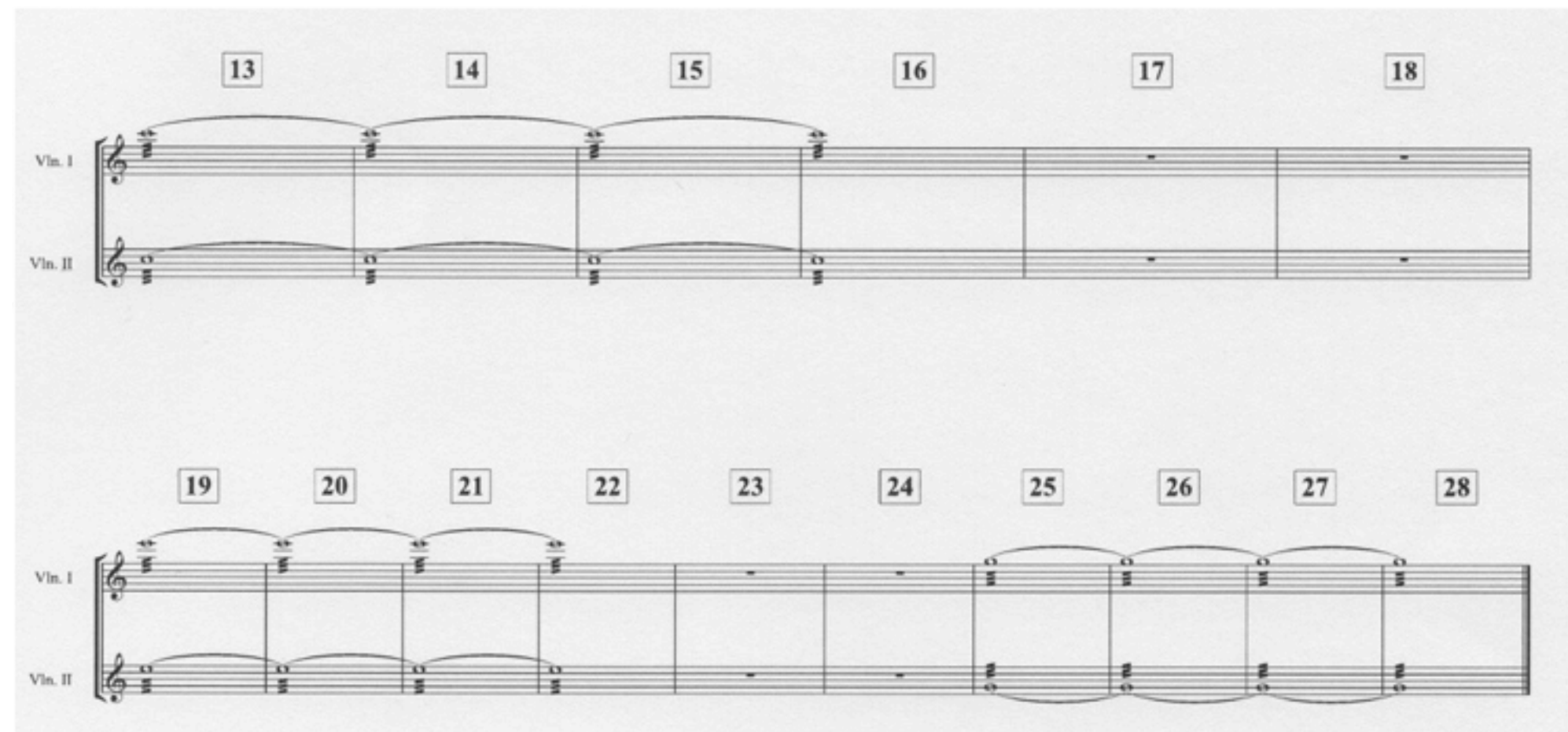
## Individual flourishes

Vln. I

Vln. II

13 14 15 16 17 18

19 20 21 22 23 24 25 26 27 28



**Tremolo strings + randomly  
Scripted flourishes**



**Sketch > MIDI > Live**



**Sketch > MIDI > Live**

# Incantations



The magic words for the Levitation Charm are  
'Wingardium Leviosa'. Be sure to make the 'gar' nice  
and long.

WINGARDIUM  
LEVIOSA





The magic words for the Levitation Charm are  
'Wingardium Leviosa'. Be sure to make the 'gar' nice  
and long.

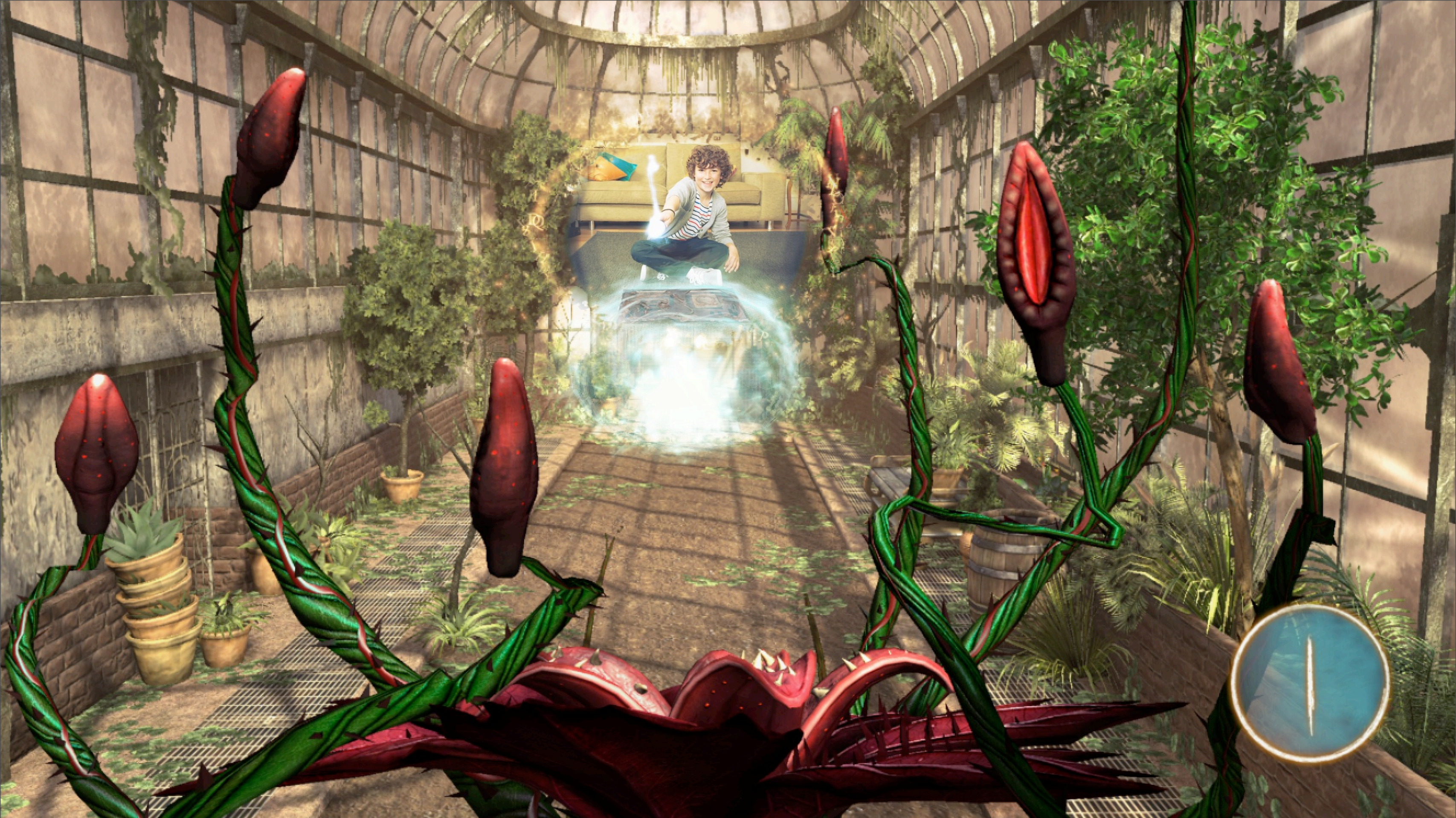
WINGARDIUM  
LEVIOSA





# Environments







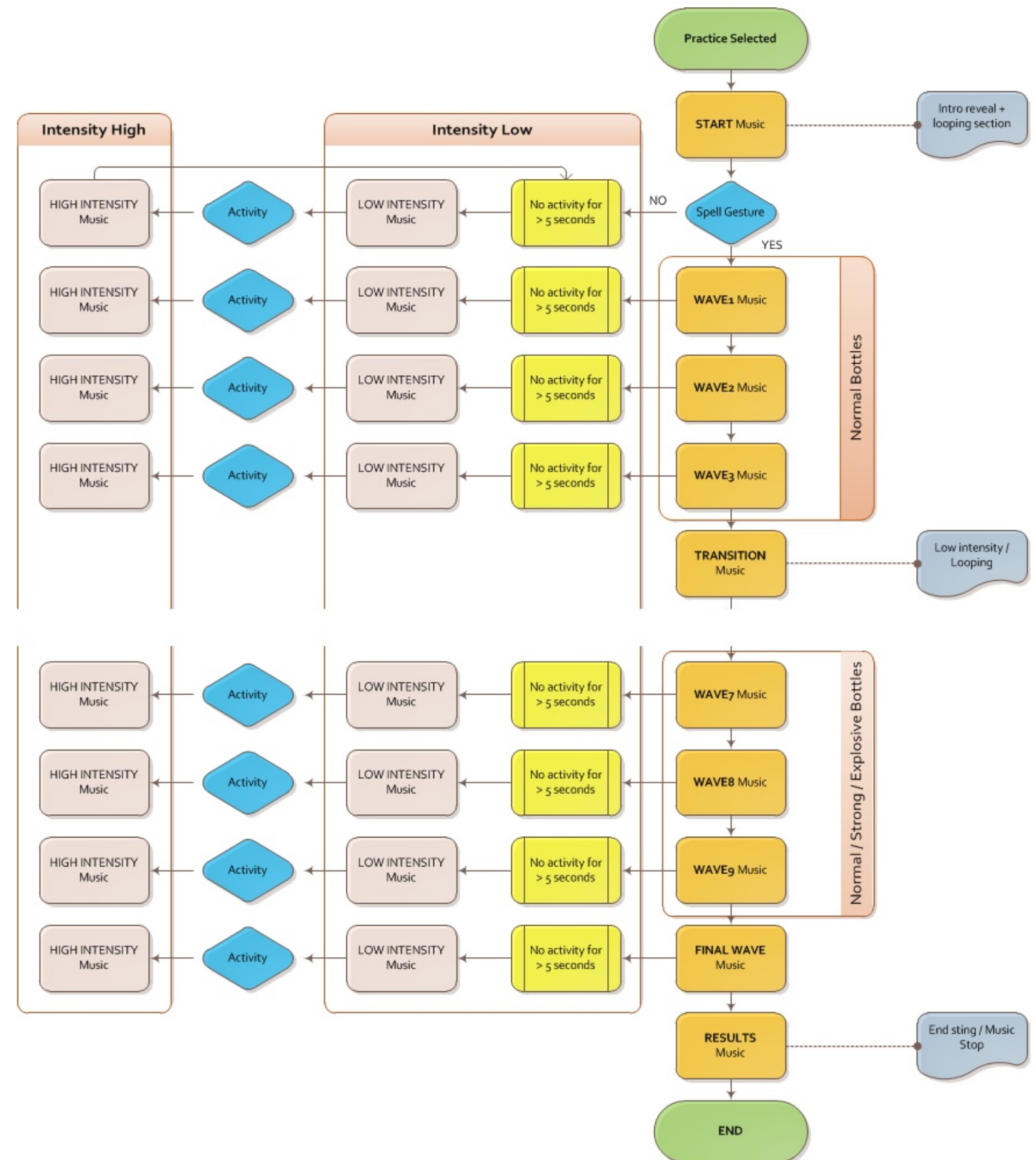








# Environments





# Chapter Spell Tests



















# Anecdotes



...and his opponent was drenched in icy rain and  
forced to dodge lightning bolts...

Lightning

Rain



...but **gradually** the sheer numbers of Dementors began to overwhelm them. Slowly the Patronuses grew weak and faint...

Boar

Bear



...but **gradually** the sheer numbers of Dementors began to overwhelm them. Slowly the Patronuses grew weak and faint...

Boar

Bear



# Conundrum Poems





# Lessons learnt from composition

*MIDI file errors exporting from Logic into Sibelius*

*Writing under pressure often leads to the best music*

*Score preparation. Triple check and check again before sending to copyist*

*Have a solid style guide and reference makes the journey much easier*

*Rely on other disciplines for assets to work with*

9/10



# Recording & Mix Session

*Four days recording. Two sessions per day*

*Seven days mixing*

*Stereo and surround*

*41 musicians*

*Live piano*



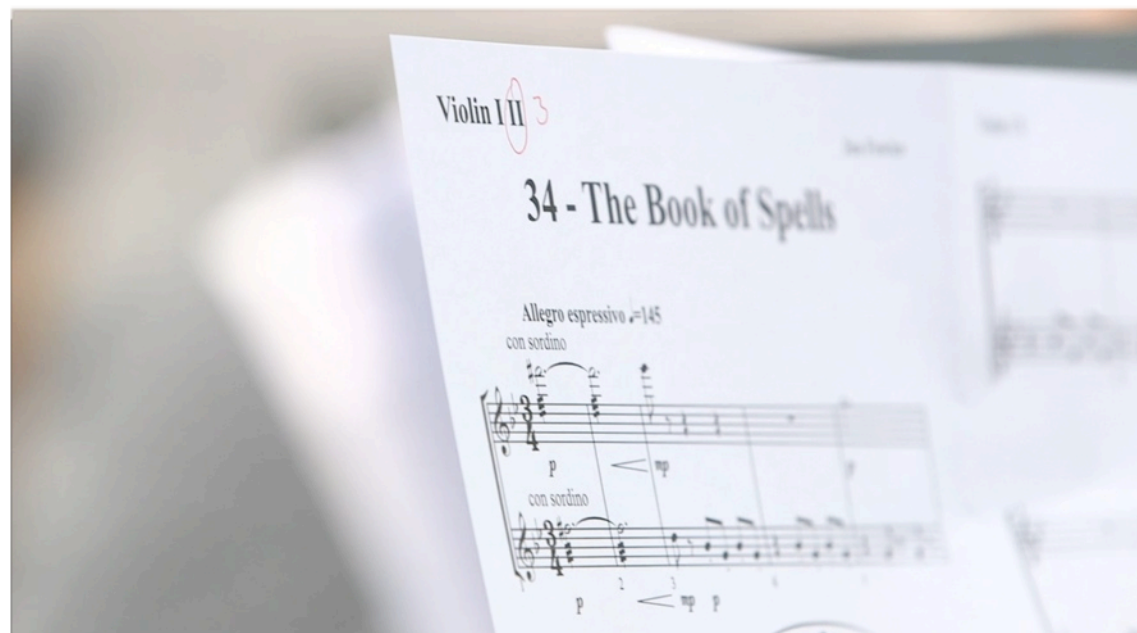


# AIR Studios

Lyndhurst Hall, London





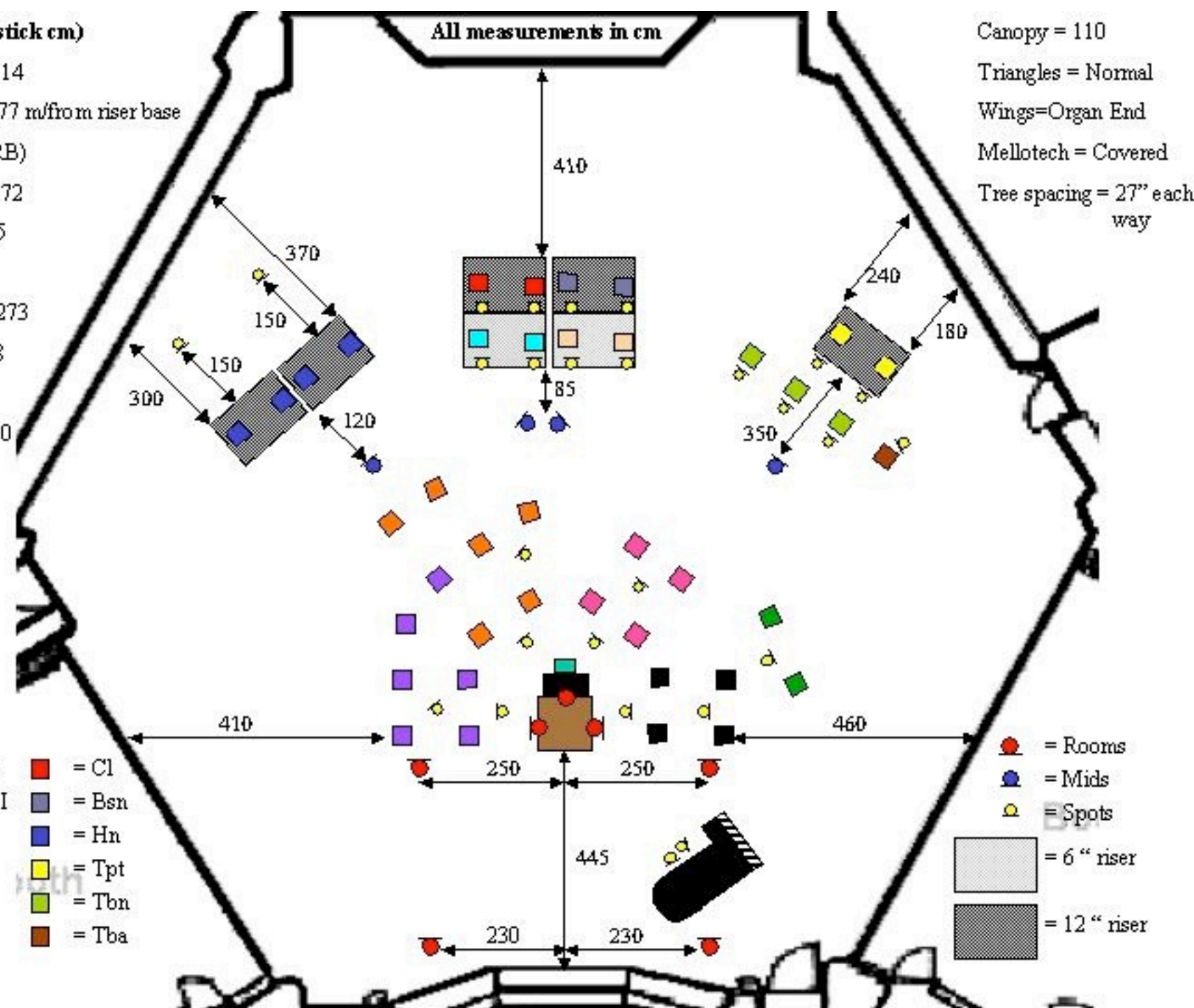


# **Heights (m/stick cm)**

Tree/Out = 314  
 Fl/Ob/Cl = 177 m/from riser base  
 Bsn = 151 (RB)  
 WW pair = 272  
 Hn Mid = 285  
 Hn = 142  
 Brass Mid = 273  
 Tpt/Tbn = 118  
 Tba = 238  
 Vln/Vla = 210  
 Vc = 140  
 Cb = 80  
 Pno = 140  
 Surr = 520

= Vln I    = Cl  
 = Vln II    = Bsn  
 = Vla    = Hn  
 = Vc    = Tpt  
 = Cb    = Tbn  
 = Fl    = Tba  
 = Ob

# **All measurements in cm**





**B**

This musical score for section B consists of six staves. The first staff has a dynamic marking of *mf* and contains triplet eighth notes. The second staff has a dynamic marking of *mp* and contains triplet eighth notes, with two measures circled in light blue. The third staff has a dynamic marking of *mf* and contains triplet eighth notes. The fourth staff has a dynamic marking of *mp* and contains triplet eighth notes. The fifth staff has a dynamic marking of *p* and contains triplet eighth notes. The sixth staff has a dynamic marking of *mp* and contains triplet eighth notes. A red box with the text "Play in Active Layer Only" is located above the sixth staff. The score is written in a single system with a key signature of one flat and a time signature of 4/4.

*mf*

*mp*

*mf*

*mp*

*p*

*mp*

Play in Active Layer Only



**B**

*mf*

*mp*

*mf*

*mp*

*p*

Play in Active Layer Only

2 Fl.  
(Active Layer Only)

2 Ob.  
(Active Layer Only)

2 Cl.  
(Active Layer Only)

2 Bsn.  
(Active Layer Only)

2 Hn.  
(Base Layer Only)

Timp.  
(MIDI)

Perc.  
(MIDI)

Hp.  
(MIDI)

Vln. II  
(Base Layer Only)

Vc.  
(Base Layer Only)

Cb.  
(Base Layer Only)

*mp*



16

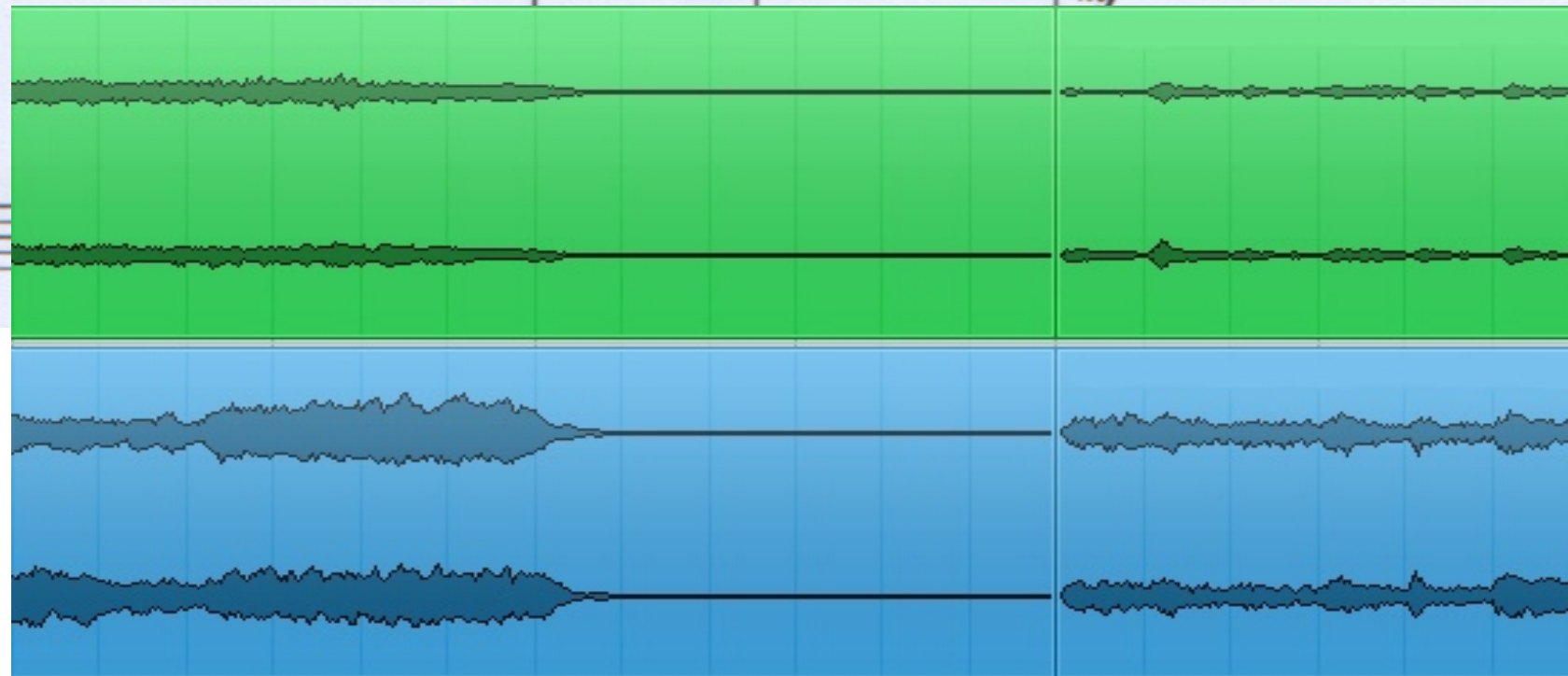
17

18

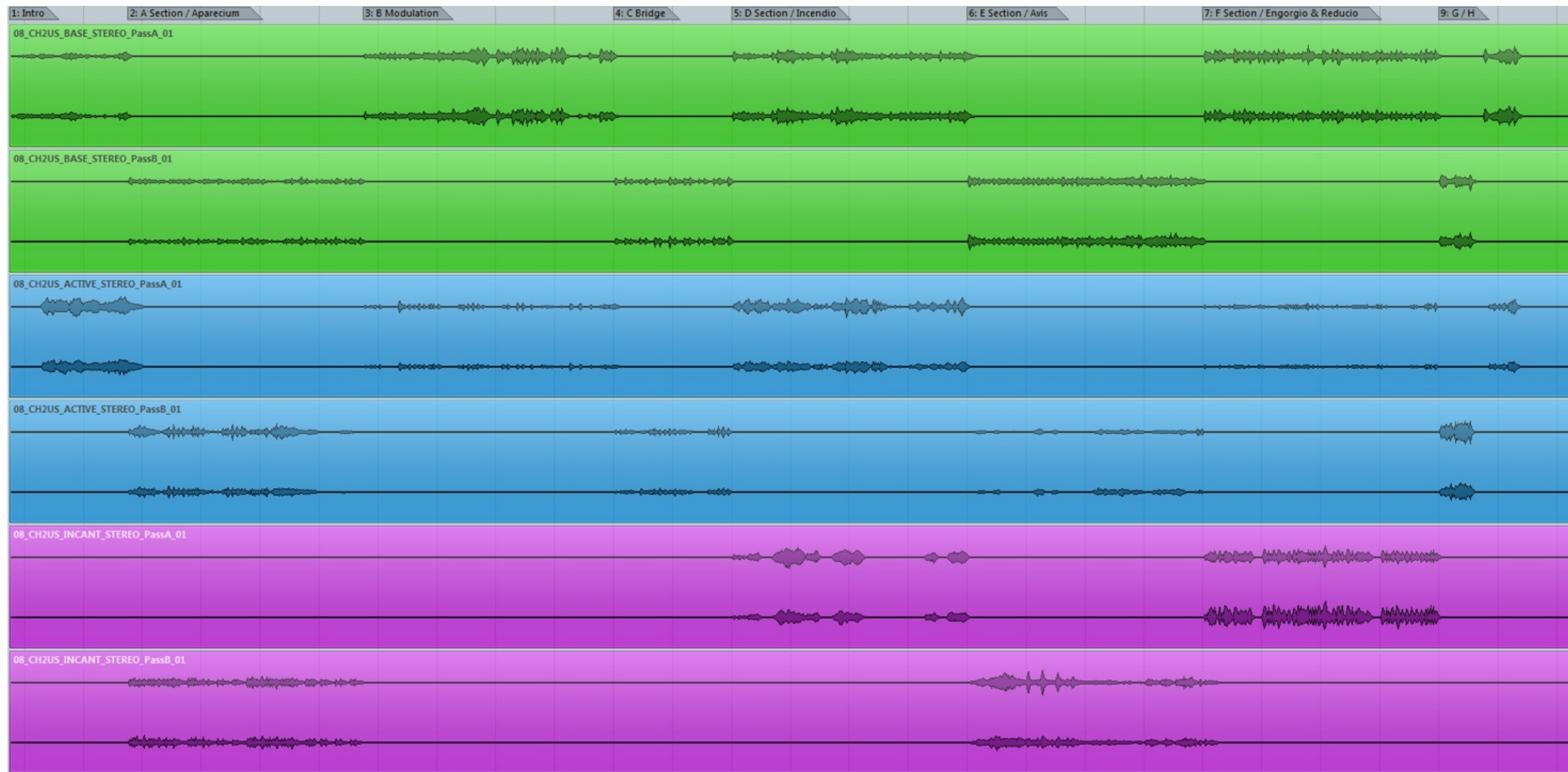
19

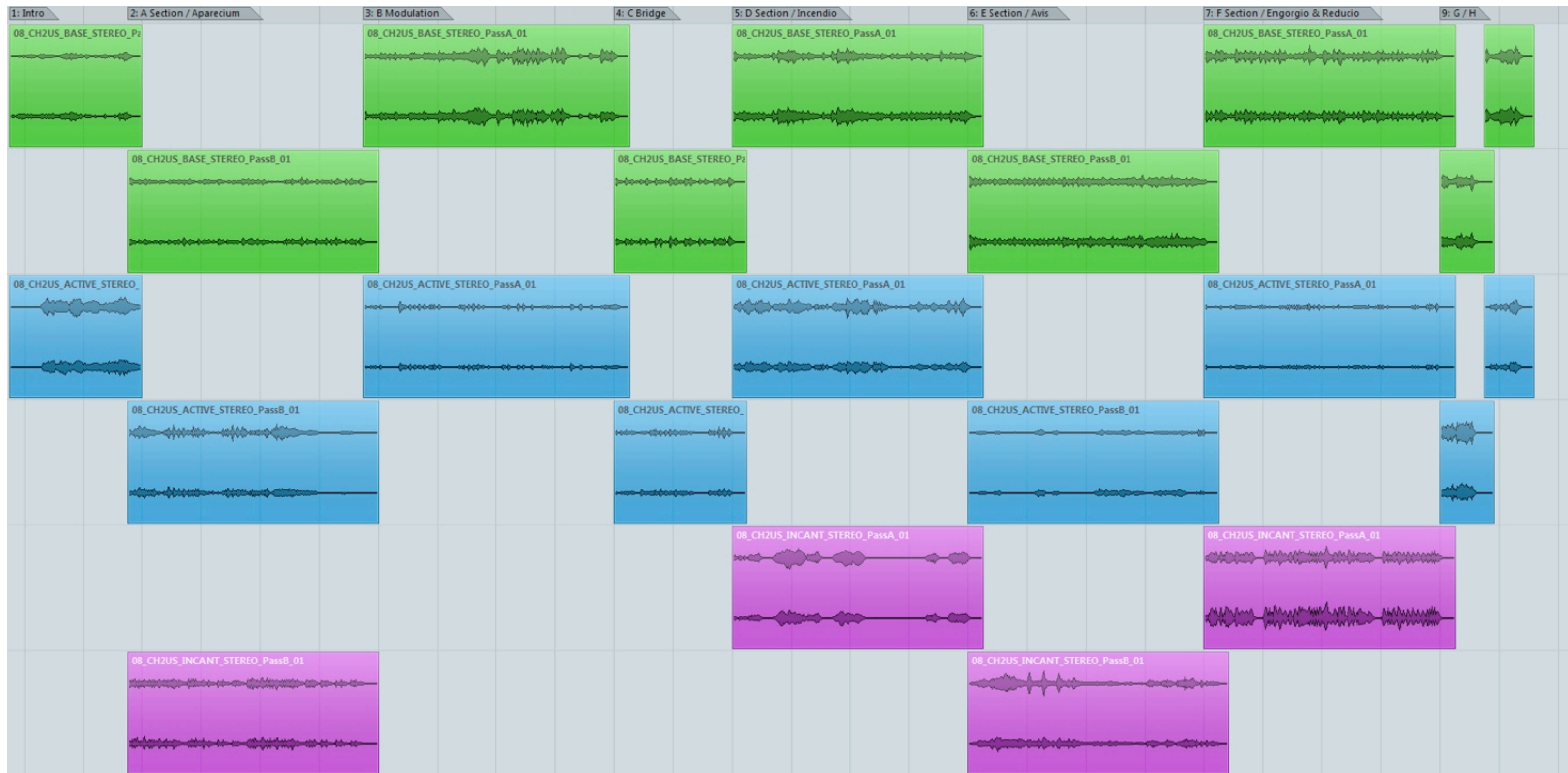
3

The image displays a musical score for Chapter Five Underscore: Base & Active Layers, spanning measures 16 to 19. The score is written for two staves, with the top staff featuring a treble clef and the bottom staff featuring a bass clef. The key signature is one flat (B-flat). The tempo is marked 'f' (forte) at measure 16 and 'mf' (mezzo-forte) at measure 19. The score includes various musical notations such as eighth notes, sixteenth notes, and rests. A large bracket labeled 'B' spans measures 18 and 19. The score is divided into four measures, with measures 16 and 17 on the left page and measures 18 and 19 on the right page. The bottom of the score features a green and blue waveform visualization.

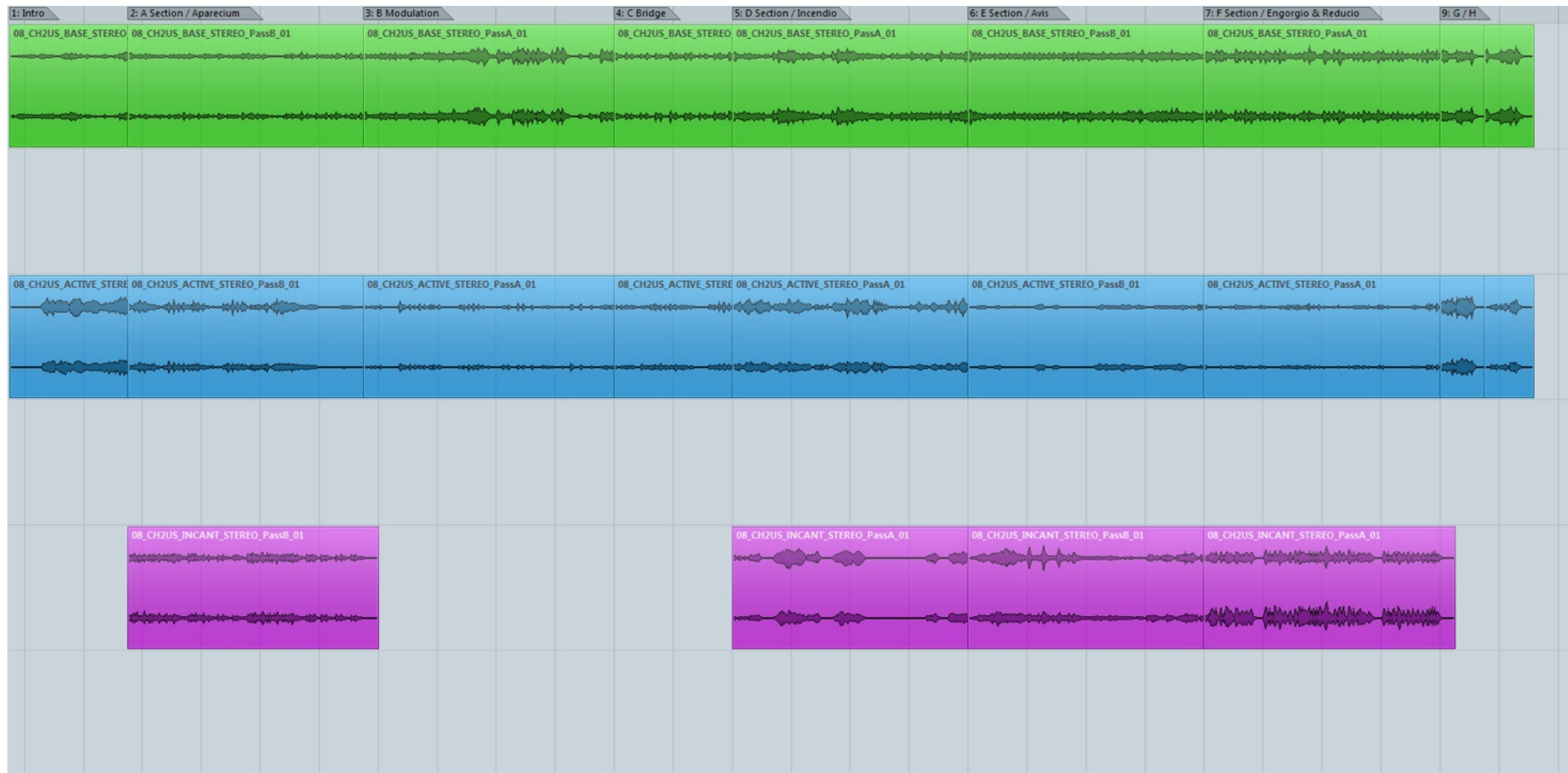










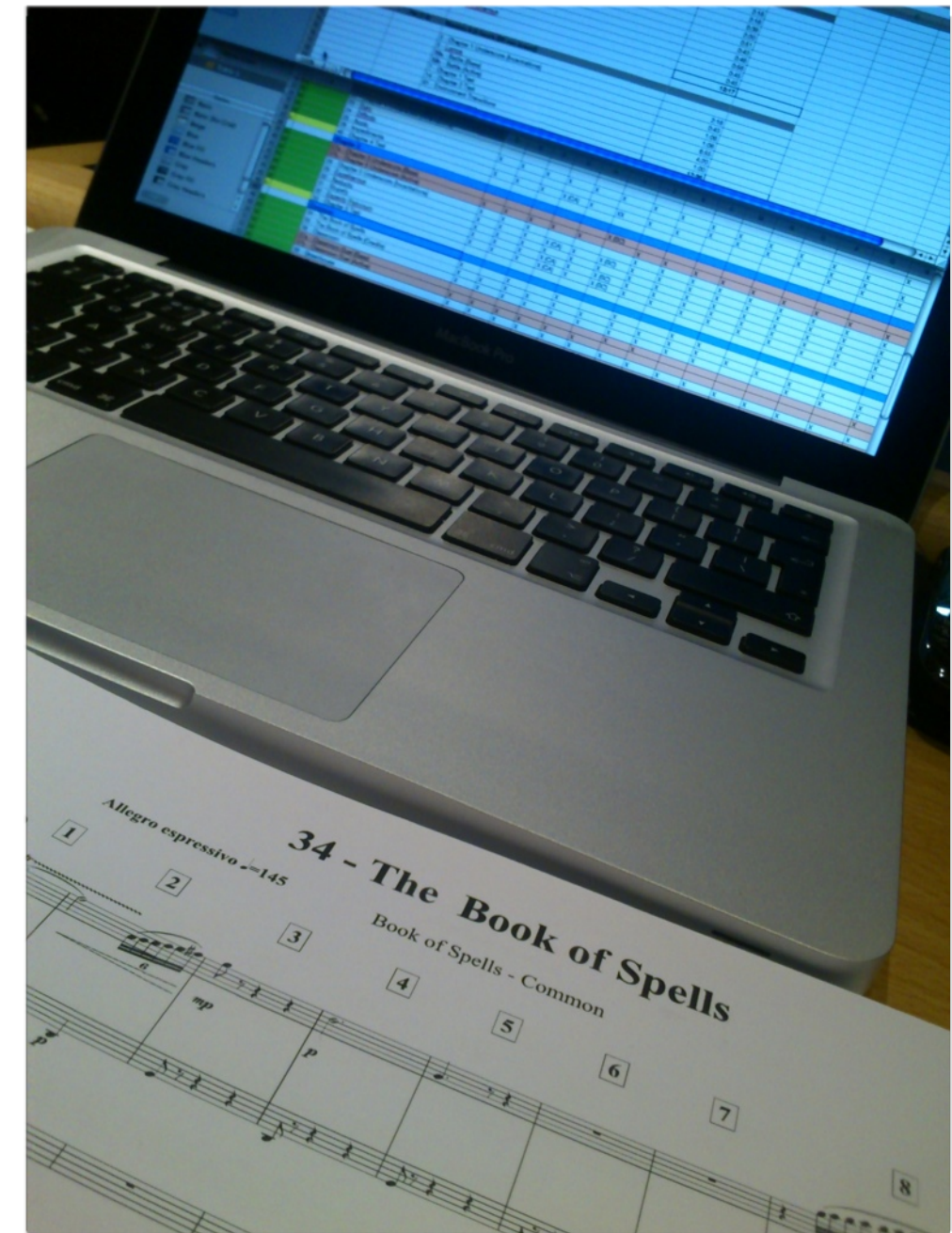


# Recording Session Schedule

*Cue tracking Spreadsheet*

*Flexibility in schedule*

*Which musicians are playing on each cue*





	Flt. I	Flt. II	Ob. I	Ob. II	Clnt. I	Clnt. II	Bsn. I	Bsn. II	Hrn. I	Hrn. II	Hrn. II	Hrn. IV	Trmp. I	Trmp. II	Trmb. I	Trmb. II	Bs. Trmb.	Tuba	Piano	Vln I	Vln II	Vla	Cel	Bs	Total	LENGTH	Estimate
Chapter 1																											
1a - Chapter 1 Underscore (Base)	X	X	X	X	X	X	X	X															X		12	2:16	2:16
1a - Chapter 1 Underscore (Active)	X	X	X	X	X	X	X	X	X	X													X		12	2:16	2:16
2 - Chapter 1 Underscore (Incantations)																									0	2:16	2:16
3 - Wingardium Leviosa	X	X	X	X	X	X	X	X	X	X										X	X	X	X	X	32	0:39	0:39
4 - Alohomora	X	X	X	X	X	X	X	X												X	X	X	X	X	30	0:58	0:58
5 - Lumos	X	X	X	X	X	X	X	X	X	X										X	X	X	X	X	32	0:43	0:51
6 - Aguamenti	X	X	X	X	X	X	X	X												X	X	X	X	X	30	0:41	0:41
7 - Chapter 1 Test																									0		4:00
Chapter 2																											
8a - Chapter 2 Underscore (Base)	X	X			X	X	X	X	X	X					X	X	X			X		X	X	X	27	2:20	2:20
8b - Chapter 2 Underscore (Active)	X	X	X	X	X	X	X	X	X	X										X	X	X	X		30	2:20	2:20
9 - Chapter 2 Underscore (Incantations)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	39	2:20	2:20
10 - Incendio	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	39	0:51	0:51
11 - Avis	X	X	X	X	X	X	X		X	X	X	X			X	X	X			X	X	X	X	X	36	0:43	0:43
12 - Aparecium	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	34	0:46	0:46
13 - Engorgio	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	38	0:56	0:56
14 - Chapter 2 Test	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	4:20	4:00
Chapter 3																											
15a - Chapter 3 Underscore (Base)																									0	2:28	2:28
15b - Chapter 3 Underscore (Active)																									0	2:28	2:28
16 - Chapter 3 Underscore (Incantations)																									0	2:28	2:28
17 - Defodio	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	0:47	0:47
18 - Reparo	X	X	X	X	X	X	X		X	X	X	X			X	X			X		X	X	X	X	36	0:56	0:56
19 - Scourgify	X	X	X	X	X	X	X	X											X		X	X	X	X	31	0:57	0:57
20 - Protego	X	X	X	X	X	X (BC)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	0:50	0:50
Chapter 4																											
21a - Chapter 4 Underscore (Base)																									0	2:34	2:34
21b - Chapter 4 Underscore (Active)																									0	2:34	2:34
22 - Chapter 4 Underscore (Incantations)																									0	2:34	2:34
23 - Duro															X		X	X		X	X	X	X	X	25	0:45	0:45
24 - Diffindo	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	36	0:43	0:43
25 - Accio									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	32	0:45	0:45
26 - Rictusempra	X	X	X	X (CA)	X	XX	X	X					X	X	X	X	X	X	X	X	X	X	X	X		0:46	0:46
Chapter 5																											
27a - Chapter 5 Underscore (Base)																									0	2:05	2:05
27b - Chapter 5 Underscore (Active)																									0	2:05	2:05
28 - Chapter 5 Underscore (Incantations)																									0	2:05	2:05
29 - Expelliarmus	X	X	X	X (CA)	X	X (BC)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	0:45	0:45
30 - Reducto	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	39	0:37	0:37
31 - Stupefy	X	X	X	X (CA)	X	X (BC)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	0:45	0:45
32 - Expecto Patronus	X	X	X	X (CA)	X	X (BC)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40	0:57	0:57
33 - Chapter 5 Test																									0		4:00
Common																											
34 - The Book of Spells	X		X		X		X		X	X									X	X	X	X	X	X	29	2:20	2:20
35 - The Book of Spells (Credits)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	41	2:27	2:20
36 - Classroom	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	37	3:00	3:00
37a - Classroom Battle (Base)																									0		2:30
37b - Classroom Battle (Active)																									0		2:30
38 - Greenhouse							X																		1		2:30
39a - Battle (Base)	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X			X	X	X	24	1:06	1:06
39b - Battle (Active)									X	X	X	X								X	X				16	1:06	1:06
Miscellaneous																											
																									TOTAL	5:18	20:29

# Lessons learnt from Recording Session

*Get someone else to proof read scores*

*Check all MIDI samples in correct octave in score*

*Have chord sheet for each cue*

*Logic doesn't export tempo changes properly when imported in Pro Tools*

*Check backing tracks are correct*

*Keep MIDI arrangements as 'clean' as possible*

*Book studio well in advance*

*Keep the musicians happy*

9/10



# Schedule

*Luxury of prototype phase*

*12 months composition*

*Composition in BETA phase*

*Needed second recording session*

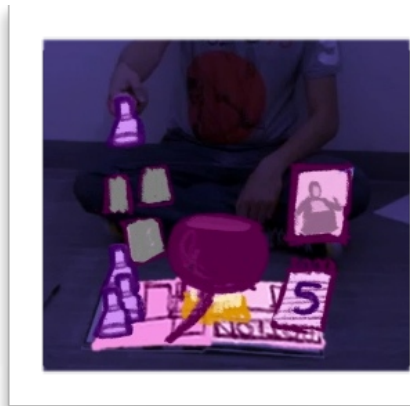
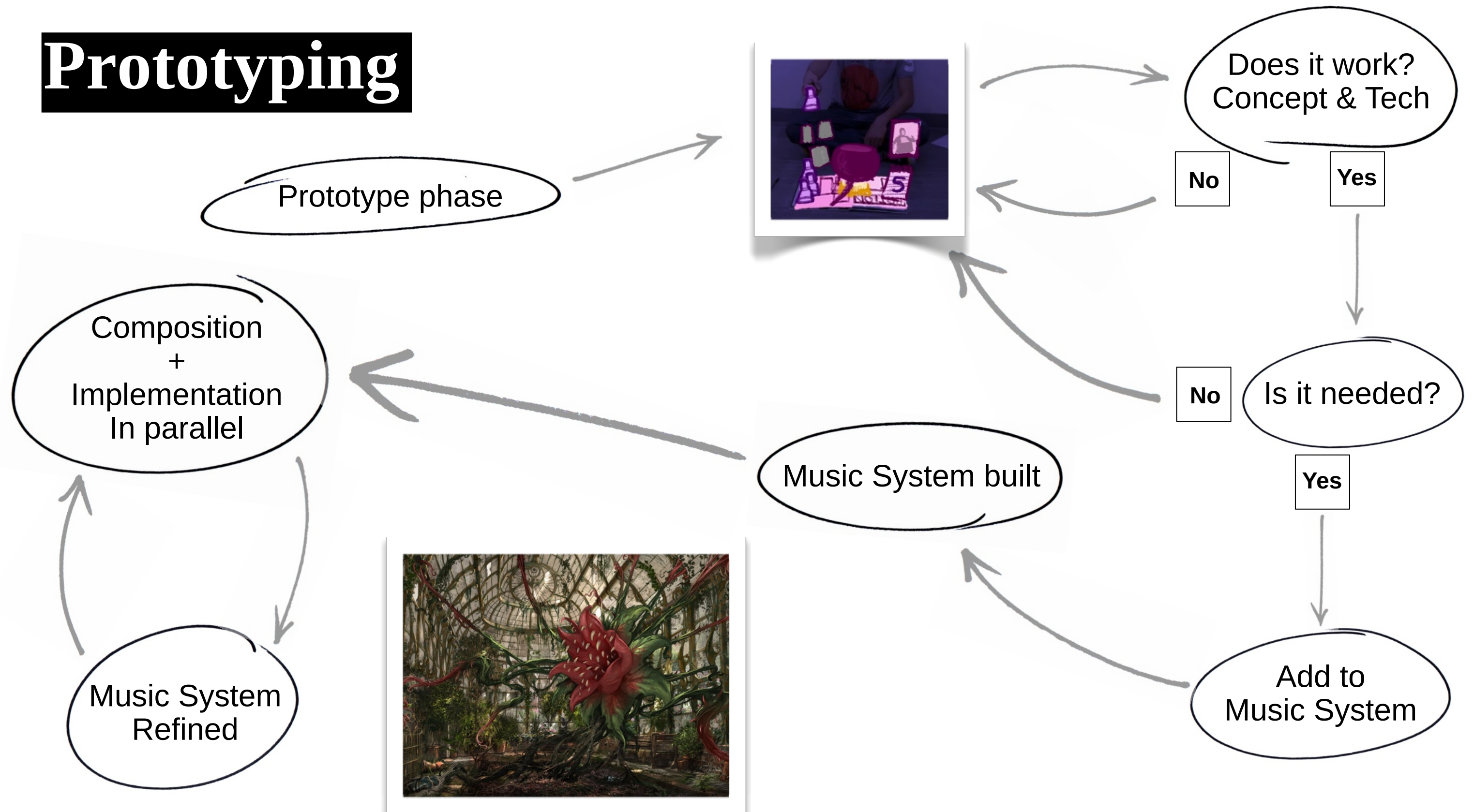
*High dependancy on other disciplines*



	1 Sep 2011	1 Oct 2011	1 Nov 2011	1 Dec 2011	1 Jan 2012	1 Feb 2012	1 Mar 2012	1 Apr 2012	1 May 2012	1 Jun 2012	1 Jul 2012	1 Aug 2012	1 Sep 2012	1 Oct 2012	1 Nov 2012
		PRE-PRODUCTION			PRODUCTION			PRODUCTION			BETA				
Prototyping															
Music System															
Test Music															
Implementation															
Composition															
Spell Themes															
Underscore															
Environments															
Spell Tests															
Anecdotes															
Poems Videos															
Music Prep															
Recording 1															
Mix 1															
Recording 2															
Mix 2															
Debug															
Game Mix															
Game Master															
Game Release															

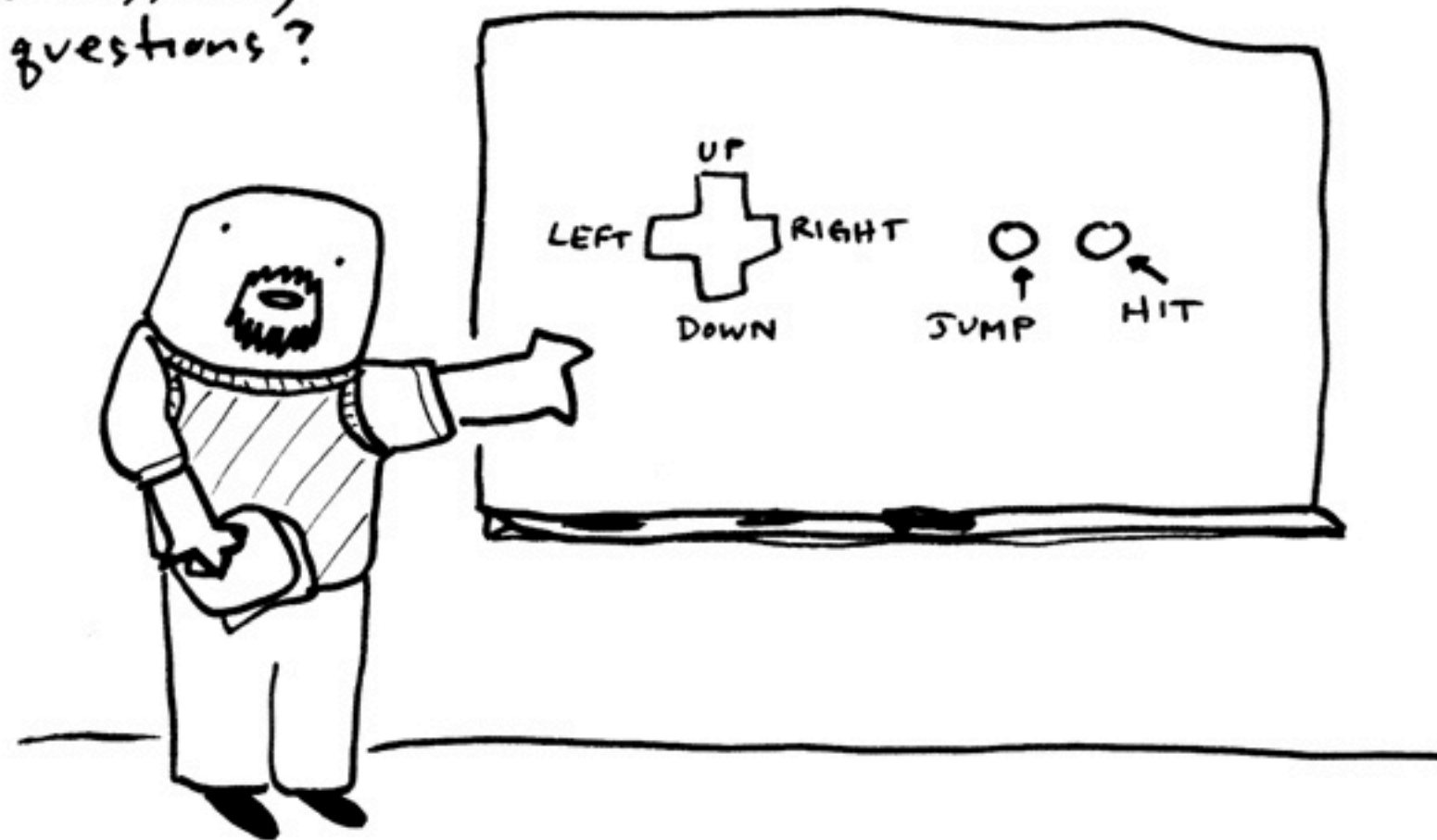


# Prototyping



# Working with Design

okay, any  
questions?





# Working with Art & Animation



# Working with Code

```
In[11]:= SubitizeGame[nmax_, {a_, b_}, colors_, tmax_] :=  
  DynamicModule[{startnextround, display, guessbutton, guesspanel},  
  
    guessbutton[n_, t_, guess_] :=  
      Button[Style[guess, 16],  
        AppendTo[GameResults[nmax, {a, b}, colors, tmax], {n, guess, t}];  
      startnextround[], ImageSize -> 40, Appearance -> "Palette"];  
  
    guesspanel[n_, t_] :=  
      Graphics[  
        Inset[Column[{Style[Text["How many items?"], 14],  
          Grid[Partition[  
            PadRight[Table[guessbutton[n, t, i], {i, nmax}],  
              Ceiling[nmax, 4], "", 4]]]], ImageSize -> 200];  
  
    startnextround[] :=  
      With[{n = RandomInteger[{1, nmax}], t = RandomReal[{0.25, tmax}]},  
        display =  
          TimedFlip[  
            {TimedFlip[{ready, SubitizeDiagram[n, {a, b}, colors]}, 1],  
              guesspanel[n, t]}, 1 + t];  
  
    startnextround[];  
    Dynamic[display]  
  ]
```







Waveform/Stream Properties

mx\_Chapter2.bank

Sounds:

# /	Name	Vol	Pan	Group	Hide	Voice Limit	Smart Pan	Looping	User 1	User 2	User 3	User 4	User 5	Us
●●	----- AEM CALLS -----	0	0	MUSIC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes	0	0	0	0	0	0
●●	mx_Default_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_Incendio_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0	0	0	0	0	0
●●	mx_Avis_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0	0	0	0	0	0
●●	mx_EngorgioReducio_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0	0	0	0	0	0
●●	mx_Aparecium_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?No?	0	0	0	0	0	0
●●	mx_Test_Spread_Start	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_Base	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_Active	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_IncendioIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0
●●	mx_AvisIncantation	120	0	MUSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No	0	0	0	0	0	0

Waveforms

Streams

Export Path	Path Group	Source	Refs	Format	Chan...	Duration	Rate	File Size
Streams/MX_CH2_INC_A...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	2	47.52	48000	2606916
Streams/MX_CH2_INC_A...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	2	46.08	48000	2527940
Streams/MX_CH2_INC_E...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	2	43.68	48000	2396292
Streams/MX_CH2_INC_I...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	2	52.32	48000	2870244
Streams/MX_CH2_US_A...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	4	14.40	48000	1580004
Streams/MX_CH2_US_A...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	4	25.92	48000	2843940
Streams/MX_CH2_US_A...	0	C:\Users\gbdenny\Desktop\Steve\Music\SCREAM\CH2\Streams\MX...	1	XVAG	4	27.36	48000	3001892

Grain Properties

Show: All

Delay: 0

Grain Palette Waveform/Stream...

Grain Properties

Multiple Grains

Notes

Sound Properties



Name: mx\_Start Group: MUSIC

Vol: 120 Pan: 0 Smart pan

Voice limit Hide Looping: Yes

Instance limit mode: Reject new Limit: 1

User 1: 0 User 2: 0

User 3: 0 User 4: 0

User 5: 0 User 6: 0

User 7: 0 User 8: 0

User 9: 0 User 10: 0

User 11: 0 User 12: 0

Comment: Reset all underscore register and start music

Grain	Delay	Vol	Pan	Priority
Start Child So...	0			
Branch to Chil...	10			

Sound Properties

Multiple Sounds

Ready

PS2: 11440 used (0 SPU, 11440 IOP), 1000000 left

PSP: 11440 used, 988560 left

PS3/PC: 12429 used, 987571 left



Monday, 15 April 2013

13:37  
06/03/2013



Thank you for listening

The End



