

# Atonality and Serialism



NO, REALLY,  
COME ON IN, GUYS!  
THEY LOVE US!

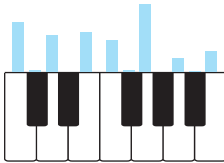


AFTER THE STEADY **INCREASE** OF **CHROMATICISM** THROUGH THE **ROMANTIC ERA**, COMPOSERS IN THE EARLY TWENTIETH CENTURY WERE READY TO TAKE THINGS TO THEIR **NATURAL CONCLUSION!**



SINCE **TONALITY** IS DEFINED AS HOW A PIECE CENTERS AROUND A PARTICULAR NOTE, THE INCLUSION OF MORE AND MORE **CHROMATIC NOTES** CAN BE THOUGHT OF AS A PROGRESSION TOWARD **ATONALITY**: THE **ABSENCE** OF TONALITY!

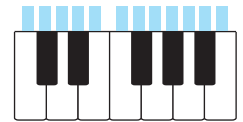
ENTER **ARNOLD SCHOENBERG**, AN AUSTRIAN COMPOSER WHO CAME UP WITH A SYSTEM TO CREATE **COMPLETE ATONALITY... USING MATH!**



W.A. MOZART  
MINUET IN C, K. 61G

SCHOENBERG FIGURED THAT TONAL MUSIC EMPHASIZES PITCHES **UNEQUALLY**, SO THE WAY TO WRITE A TRULY **ATONAL** PIECE WAS TO ENSURE THAT **EVERY PITCH** IS REPRESENTED **EQUALLY!**

NOOOO!



A. SCHOENBERG  
STRING QUARTET NO. 4

SCHOENBERG WOULD BEGIN EACH COMPOSITION BY COMING UP A SEQUENCE OF **TWELVE NOTES**, WHERE EACH PITCH OF THE CHROMATIC SCALE WAS INCLUDED **ONLY ONCE...** WE CALL THIS A **TWELVE-TONE ROW!**

C F B B $\flat$  D G G $\flat$  E $\flat$  E A A $\flat$  D $\flat$

WHEN BUILDING A ROW, AVOID BITS OF TONALITY LIKE **TRIADS** OR FRAGMENTS OF **FAMILIAR SCALES!** ONCE YOU HAVE A **GOOD ROW**, YOU'VE CREATED A **PURE** (ALBIET **SHORT**) **ATONAL COMPOSITION!**

AS A WAY TO COME UP WITH **MORE ROWS** THAT ARE **RELATED** TO OUR **ORIGINAL ROW**, SCHOENBERG USED A **TWELVE-TONE MATRIX**.

THE MATRIX IS A **12 X 12 GRID** WITH OUR **ORIGINAL NOTES** PLACED IN THE **TOP ROW**.

WE CALL  
THIS ROW **P-1**:  
"P" STANDS  
FOR "**PRIME**"!

TO FILL IN THE **REST** OF THE MATRIX, START BY TAKING THE **ORIGINAL ROW** AND WRITING ITS **INVERSION**: A ROW THAT STARTS ON THE **SAME PITCH**, BUT PROCEEDS **UPSIDE-DOWN**: IF THE ORIGINAL GOES **UP** A **PERFECT FOURTH**, THE INVERSION SHOULD GO **DOWN** A **PERFECT FOURTH**!

TAKE THE **INVERSION** AND WRITE IT GOING **DOWN** THE **LEFT-HAND SIDE** OF THE MATRIX.

	I-1	I-6	I-12	I-11	I-3	I-8	I-7	I-4	I-5	I-10	I-9	I-2
P-1	C	F	B	B $\flat$	D	G	G $\flat$	E $\flat$	E	A	A $\flat$	D $\flat$
P-8	G	C	G $\flat$	F	A	D	D $\flat$	B $\flat$	B	E	E $\flat$	A $\flat$
P-2	D $\flat$	G $\flat$	C	B	E $\flat$	A $\flat$	G	E	F	B $\flat$	A	D
P-3	D	G	D $\flat$	C	E	A	A $\flat$	F	G $\flat$	B	B $\flat$	E $\flat$
P-11	B $\flat$	E $\flat$	A	A $\flat$	C	F	E	D $\flat$	D	G	G $\flat$	B
P-6	F	B $\flat$	E	E $\flat$	G	C	B	A $\flat$	A	D	D $\flat$	G $\flat$
P-7	G $\flat$	B	F	E	A $\flat$	D $\flat$	C	A	B $\flat$	E $\flat$	D	G
P-10	A	D	A $\flat$	G	B	E	E $\flat$	C	D $\flat$	G $\flat$	F	B $\flat$
P-9	A $\flat$	D $\flat$	G	G $\flat$	B $\flat$	E $\flat$	D	B	C	F	E	A
P-4	E $\flat$	A $\flat$	D	D $\flat$	F	B $\flat$	A	G $\flat$	G	C	B	E
P-5	E	A	E $\flat$	D	G $\flat$	B	B $\flat$	G	A $\flat$	D $\flat$	C	F
P-12	B	E	B $\flat$	A	D $\flat$	G $\flat$	F	D	E $\flat$	A $\flat$	G	C
	RI-1	RI-6	RI-12	RI-11	RI-3	RI-8	RI-7	RI-4	RI-5	RI-10	RI-9	RI-2

WE CAN MAKE  
OTHER ROWS  
BY GOING  
**BACKWARD**:  
"R" IS FOR  
"**RETROGRADE**"!

AFTER PUTTING IN  
**ROW I-1**, WE  
**TRANSPOSE** THE  
ORIGINAL ROW  
SO THAT IT BEGINS  
ON EACH OF THE  
NOTES GOING DOWN  
THE LEFT, CREATING  
**P-2** THROUGH **P-12**.  
AND, OF COURSE  
**R-2** THROUGH **R-12!**

DOING SO WILL ALSO  
CREATE ROWS **I-2**  
THROUGH **I-12**. AND  
READING FROM  
**BOTTOM TO TOP**  
GIVES YOU **RI-1**  
THROUGH **RI-12**:  
**RETROGRADE**  
**INVERSION!**

TO USE THE MATRIX TO CREATE AN **ENTIRE TWELVE-TONE ROW COMPOSITION**:

THINGS YOU **CAN** DO:

- USE ANY ROW, ANY TIME
- RESTRIKE NOTES BEFORE MOVING TO THE NEXT ONE

- COMBINE ADJACENT NOTES INTO CHORDS
- PASS ROWS BETWEEN VOICES
- OVERLAP ROWS

THINGS YOU **CAN'T** DO:

- USE PARTIAL ROWS
- CHANGE ORDER OF NOTES WITHIN A ROW
- TRY TO BEND THINGS TOWARD TONALITY

OH, AND **START YOUR PIECE** WITH **P-1**, SO SOMEONE ANALYZING YOUR PIECE CAN **FIGURE OUT YOUR MATRIX!**