

Atonality and Serialism



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

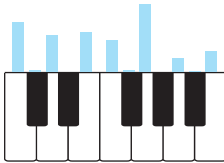


AFTER THE STEADY **INCREASE** OF **CHROMATICISM** THROUGH THE **ROMANTIC ERA**, COMPOSERS IN THE EARLY TWENTIETH CENTURY WERE READY TO TAKE THINGS TO THEIR **NATURAL CONCLUSION!**



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!

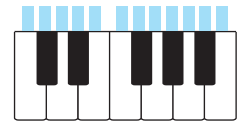
ENTER **ARNOLD SCHOENBERG**, AN AUSTRIAN COMPOSER WHO CAME UP WITH A SYSTEM TO CREATE **COMPLETE ATONALITY... USING MATH!**



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!**