# hey, it's kids! SPARKY THE MUSIC THEORY DOG!


**Q:** Dear Sparky:
I understand pitch class sets, normal form and prime form, but are there other ways to describe a chord using set theory?

-G.L., Corona del Mar, CA

**A: WOOF!***

***TRANSLATION:** BECAUSE **SET THEORY** IS PRIMARILY INTERESTED IN THE **INTERVALS** WHICH MAKE UP A CHORD, **PRIME FORM** IS USUALLY THE BEST WAY TO CATEGORIZE CHORDS USING SET THEORY... BUT THERE ARE **OTHER WAYS** THEORISTS USE TO DESCRIBE SETS IN THEIR PRIME FORM!


**HOWARD HANSON,** ONE OF THE FIRST PROPONENTS OF SET THEORY, CAME UP WITH A **CODE** WHICH COUNTED EACH TYPE OF **BASIC INTERVAL,** ORDERED FROM **CONSONANCE** TO **DISSONANCE:**

| P4 P5 | M3 m6 | m3 M6 | M2 m7 | m2 M7 | TT |
|---|---|---|---|---|---|
| P | M | N | S | D | T |

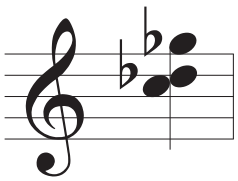
[0,3,4,7] = $PM^2N^2D$
[0,1,2,6] = $PMSD^2T$

TO FIGURE OUT THE **HANSON ANALYSIS,** LIST THE LETTERS IN THIS ORDER, OMITTING ANY INTERVALS NOT PRESENT AND USING SUPERSCRIPTED NUMBERS TO SHOW DUPLICATES.

YOU COULD USE A **MNEMONIC** TO REMEMBER THE ORDER... LIKE **"PLEASE MAKE NICK STOP DOING THAT"!**


WAIT... DOING **WHAT?**

**HANSON ANALYSIS:** PDT



[0,1,6]

**NOWADAYS,** MOST THEORISTS EXPRESS THIS CONCEPT IN A MORE **MATHEMATICAL** WAY, USING WHAT WE CALL AN **INTERVAL VECTOR:**

| m2 M7 | M2 m7 | m3 M6 | M3 m6 | P4 P5 | TT |
|---|---|---|---|---|---|
| ( # | # | # | # | # | # ) |

[0,3,4,7] = **(102210)**
[0,1,2,6] = **(210111)**

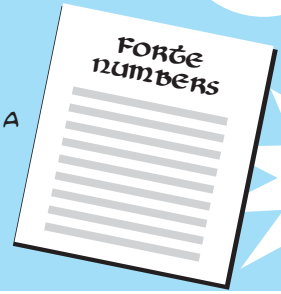
**INTERVAL VECTOR:** (100011)


TWENTIETH-CENTURY THEORIST **ALLEN FORTE** FIGURED THAT SINCE THERE WAS A FINITE NUMBER OF POSSIBLE SETS, SOMEONE OUGHT TO **CATALOG THEM ALL!**

**FORTE NUMBER:** 3-5

OF COURSE, THAT SOMEONE WAS **ALLEN FORTE,** WHO CAME UP WITH THE SYSTEM OF **FORTE NUMBERS:** A UNIQUE NUMBER FOR **EACH AND EVERY POSSIBLE SET.**

IN HIS CHART, FORTE LABELED SETS WHICH HAD DIFFERENT **PRIME FORMS** BUT THE SAME **INTERVAL VECTOR** WITH A **"Z".** LIKE **4Z-15** AND **4Z-29,** WHICH ARE BOTH CALLED **ALL-INTERVAL TETRACHORDS...** SINCE THEY BOTH HAVE THE INTERVAL VECTOR **(1,1,1,1,1,1)!**




HOW DO YOU FIGURE OUT A SET'S **FORTE NUMBER?**

**STEP ONE:** LOOK IT UP ON THE CHART.

**THERE IS NO STEP TWO!**

# DOING STUFF THE SPARKY WAY IS ALWAYS FUN!