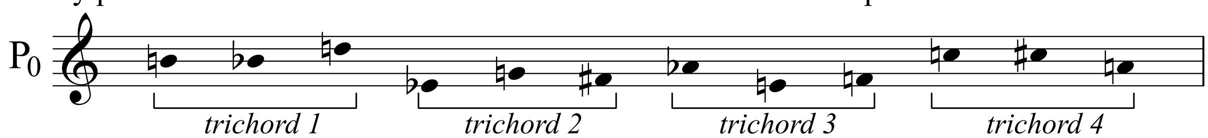
# 6.16 Surviving Serialism 4: Derivation, Invariance, Combinatoriality

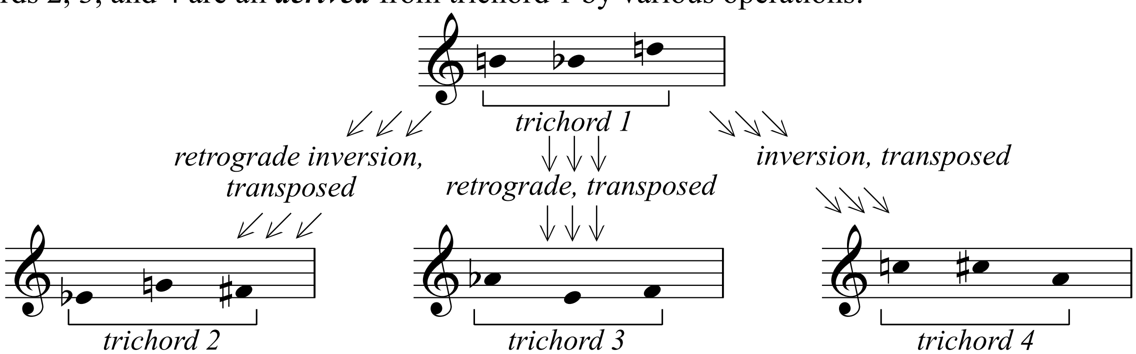
## Derived Rows

***Derivation*** = Creating a twelve-tone row by applying a combination of transposition, inversion, and/or retrograde to a set containing less than twelve pitch classes. ***Trichords*** (3 pitch classes) are most common, but ***dyads*** (2 pitch classes), ***pentachords*** (4 pitch classes) and ***hexachords*** (6 pitch classes) are possible. ***Anton Webern*** favored this technique.

One of many possibilities is shown in this row from Webern's *Concerto* Op. 24:



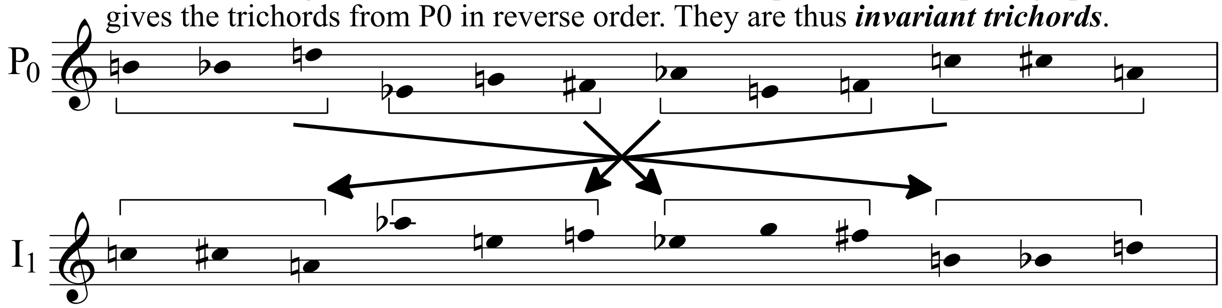

Trichords 2, 3, and 4 are all ***derived*** from trichord 1 by various operations:




## Invariance and Combinatoriality

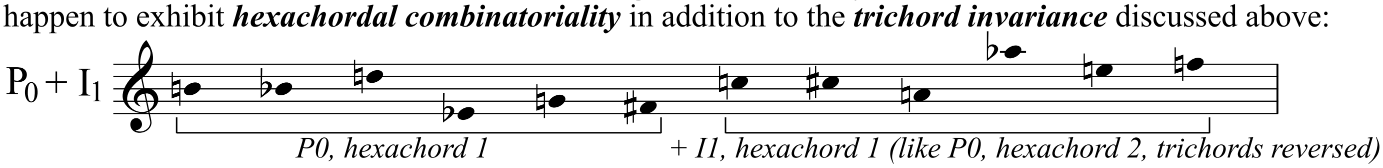
***Invariance*** = A twelve-tone row that recreates 1 or more subsets (dyads, trichords, pentachords, or hexachords) after undergoing some combination of transposition, inversion, and/or retrograde. ***Derived rows*** often exhibit ***invariance*** because of the close relationships among the subsets.

Below, inverting the row from Webern's *Concerto* Op. 24 and transposing up one half step gives the trichords from P0 in reverse order. They are thus ***invariant trichords***.




***Combinatoriality*** = A type of invariance in which a subset of a row combines with subsets of transpositions, inversions, and/or retrograde inversions of the row to create a new twelve-tone row.

***Hexachordal combinatoriality*** = The most common type of combinatoriality, combining the ***first hexachord*** of one row form with the ***first hexachord*** of a different row form (transposition, inversion, and/or retrograde inversion) to create a new row. In other words, the first six pitch classes of one row form are the last six of a different row form, ***though not necessarily in the same order***. P0 and I1 above happen to exhibit ***hexachordal combinatoriality*** in addition to the ***trichord invariance*** discussed above:




## All-Interval Rows

***All-interval row*** = Any row that contains one of each type of ***ascending*** interval ***from 1 to 11 half steps***. These rows ***may or may not*** be derived or combinatorial.

All-interval row from *Lyric Suite* by Alban Berg. Numbers indicate ***ascending*** half steps.