in Mixed Accents

Piano Study

RUTH CRAWFORD
General Statistics of Pitch

- Range of pitch is 7.4 (6 octaves and a fraction second)
- Low pitch of piece is 3.4 (6)
- High pitch of piece is 10.8 (D)
- Mean interval (time reduced) \( \pi = 2.99 \)
- Mean interval (time reduced) \( \pi = 4.35 \)
- Mean pitch \( \pi = 6.675 \) (approx. half note middle C)
- Total number of notes L = 304

Time Series Function

Showing "Periodically Ipplies"

Piano Study... as time series

Society for Music Theory, Montage "Piano Study"
Tones Inversions of Intervals above the Intervals at separate Intervals, the man 7th in each.

Interval histograms, non-intonation reduced, all sections.

Society for Music Theory, Montreal
"Envisioning Ruth Crawford Seeger's Piano Study"
Lengths of different sections and groups (in numbers of notes)
Mean and ranges of pitches for groups in 5 sections
Pitch mean, range and standard deviation of sections' whole piece
Linear and combinatorial interval means, each section
The shorter sections are superimposed over the longest section 3, at the beginning of each time series.

Pitch ranges and standard deviations of five sections, each group.
Note periodicity of spikes and large spikes near beginning and end of the work as well as one
more or less "near" the golden mean.

Sections start on note #5: 0
54 122 383 451

Pitch class:

Statistics for whole piece (number of notes from a given note without repeating a
that pitch class is repeated)

This time series illustrates the number of notes from a given note index before

Time Series: # of notes without repeat

# without repeat

35

Number of notes without repeating pitch class

Society for Music Theory, Inc. 1993

Envisioning Where Crawford Seeger’s Piano Study...
These are slightly generalized versions of metrics, without scaling or weighting functions. These metrics are not easily computable and the number of measures is limited to the indexed lower case characters of the alphabet.

\[
\begin{align*}
\text{ODD (ordered combinatorial direction) metric} & : L^{-1} \\
& (((1+L^2)N^2)u8s') (1+L^2)W^2)u8s') \sum_{L^1} \sum_{L^1}
\end{align*}
\]

\[
\begin{align*}
\text{UCD (unordered combinatorial direction) metric} & : \text{OSW}\text{C} \times \text{OSW}\text{C} \\
& \sum_{L^1} \sum_{L^1}
\end{align*}
\]

\[
\begin{align*}
\text{ODD (ordered combinatorial magnitude) metric} & : \text{OSW}\text{C} \times \text{OSW}\text{C} \\
& \sum_{L^1} \sum_{L^1}
\end{align*}
\]

\[
\begin{align*}
\text{UCM (unordered combinatorial magnitude) metric} & : \text{OSW}\text{C} \times \text{OSW}\text{C} \\
& \sum_{L^1} \sum_{L^1}
\end{align*}
\]

\[
\begin{align*}
\text{L-I} & : \text{OSW}\text{C} \times \text{OSW}\text{C} \\
& \sum_{L^1} \sum_{L^1}
\end{align*}
\]
OCM much greater spread. OCD is more even between adjacent groups. That is, magnitude changes more than contour.

OCM vs. OCM metric compared

OCM and OCM metrics compared, adjacent groups, entire piece (directional vs. magnitude)
element are weighted higher than all intervals to the left and finally all intervals to the left.

1/1 weighting function is not described. The importance of intervals to higher indices increases the difference between the worlds. The importance of intervals to higher indices decreases the importance of intervals proportional to their order difference.

Superimposing CCW with 1/1 weighting function on CCW with no weighting function.

Ordered Combinatorial Magnitude (OCM) metrics compared, adjacent groups' entire piece (same metric different weighting functions).
Scatter plots, three different metrics, section 3, continued.

(1st metric uses a 1/1 weighting function, section 2 uses unit functions, section 3 uses.)
First and last section 3

First and last (1/1)

other metric uses a 1/J weighting function section 2 use unit functions

2d scatter plots, three different metric sections 3
OCM Metric (Section 1)

Multidimensional scaling coordinates in 2 dimensions:
OCD Metric (Section 1)

Multidimensional scaling coordinates in 2 Dimensions:
OCC Metric (section 2), unity scaling
Multidimensional scaling coordinates in 2 dimensions: