

Icarus in Flight

In modeling the earth's changing climate, my new quartet, *Icarus in Flight*, uses historical data on population growth, carbon emissions and land-use transformation, during the period 1880 projected out to 2080, to control certain aspects of the music.

- *Population growth* controls the average density of musical events over time, increasing, in the worst case, by a factor of 9. In this context, density means the number of musical events in a given time period (if more than one instrument initiates an event at the same time it is still considered one event).
- *Carbon emissions* control the frequency range of the music, from lowest to highest pitch, increasing gradually from a perfect fifth in the middle register to a span of 6.25 octaves, before collapsing to almost nothing.
- With respect to *land-use*, an increase from 13% to 43% of the earth's land surface devoted to human use (i.e. habitation, agriculture and grazing) is represented by the increasing proportion of music that is played with specialized timbres (tone colors), including mainly pizzicato, tremolo bowing, and bowing close to the bridge (producing a fragile timbre characterized by a greater proportion of high frequency partials).

The era of international cooperation on climate change begins circa 1979. If one listens closely one can hear fleeting moments of repose on the interval of a major 3rd marking the dates of international meetings.

Icarus in Flight is comprised of three large sections played without pause: the first representing the years 1880 to 1945, when the data are growing slowly; the second from 1945 to 2015 when growth accelerates exponentially; and the third from 2015 to 2080. In the last section, our future, the controlling data alternate between the best and worst case future scenarios (i.e., representative concentration pathways 2.6 and 8.5) based on the models developed by the Inter-governmental Panel on Climate Change (IPCC), a scientific body under the auspices of the United Nations. Each year occupies eight seconds of musical time, the entire piece lasting about 27 minutes.

The title of my new quartet offers a metaphor for the trajectory of climate change. Imprisoned by King Minos on the isle of Crete, the brilliant Athenian craftsman Daedalus fashioned wings of feathers fixed with wax for himself and his son Icarus, so to escape from the isle by flight. Daedalus warned his son against flight too low or too high, to avoid both the lading dampness of the sea and the wax-melting heat of the sun. Elated by the thrill of flight, Icarus ignored his father's admonitions, venturing high into an environment too warm to sustain him.

- Richard Festinger