SINGULARITY
Atlantic Coast Conference Band Directors Association, James E. Croft Grant for Young and Emerging Wind Band Composers, 2014 Award Recipient

for wind ensemble and live electronics
~15 minutes

I. Sol
II. Multiply and Divide
III. Electrogenesis
INSTRUMENTATION: (one per part)

piccolo
flute 1, 2
oboe 1, 2
english horn
bassoon 1, 2
tenor saxophone
clarinet in E♭
bass clarinet
alto saxophone 1, 2
tuba
clarinet in B♭ 1, 2, 3
baritone saxophone
trombone 1, 2
tenor saxophone
trombone 1, 2
in B♭ 1, 2, 3
French horn 1, 2, 3, 4
baritone saxophone
contrabassoon
tambourine
vibraphone (medium yam, motor off throughout)
vibra slap, xylophone
bass drum (hard and soft beaters), cabasa,
mirlimba (hard yam), rattle, tubular bells
snare drum, tom-toms (3), triangle
jamb block, slapstick, snare drum (sticks and brushes),
crecords cymbals, small tam-tam sticks, tambourine,
suspended cymbal (medium yam), triangle

computer (see notes below)

piano

percussion 1

percussion 2

percussion 3

percussion 4


Program Notes:

Singularity is inspired by the idea of a technological singularity, as explored by Ray Kurzweil, Isaac Asimov, and other scientific writers. The piece outlines a narrative of interaction between organic life, as represented by the acoustic instruments, and non-organic life, as represented by the electronic sound. What begins as a musical depiction of a balanced, thriving ecosystem gives birth to an anomaly, which evolves and gradually subsumes its environment, imposing an unyielding order to all parameters, eventually reaching equilibrium itself.

Technical Notes:
The stereo electronic sound which accompanies the instruments is generated by SuperCollider, a free, open source, and cross-platform programming language for audio synthesis, available at supercollider.sourceforge.net, and performed on a laptop computer by a member of the ensemble, who reads from a notated part and follows the conductor. Singularity explicitly avoids the 'fixed media' paradigm and does not require an in-ear click track. Rather, the electronics are manually generated in real-time, and are designed to be more forgiving of discretionary tempo changes and other musically expressive choices.

A high quality, professional stereo loudspeaker setup is absolutely required. A subwoofer is strongly recommended to fill the low end of the spectrum. In addition, a mixer is strongly recommended, to provide physical faders which allow quick and easy volume adjustment. The mixer should be placed on stage with the laptop performer, or in the hall with a sound technician. The two speakers should be spread wide and placed behind the ensemble (the subwoofer may be placed wherever is convenient). If possible, a second pair of speakers should be added to supplement the overall level and further surround the ensemble.

The laptop should be running Mac OS 10.6 (or later) with at least 4GB of RAM and SuperCollider 3.6.5 (or later). A README file accompanies the digital materials and provides details on the software setup and performance. The laptop's audio output should be connected to a mixer (or to a digital audio interface, whose output is then routed to the mixer), and the mixer's output should be sent to the speakers and subwoofer.

Performance Notes:

Much of the electronic sound is generated algorithmically, and is unique with each performance. As a result, the notation in the electronics staff is imprecise, and should be treated as a guide, rather than an exact representation.

Boxed letters with down/up arrows in the electronics staff indicate that the laptop player should press the corresponding key at the specified moment. In some cases the key should be held down and released, as indicated (e.g. Mvt. I, m. 54).

In Mvt. II, m. 142-148, the [J] key is used to track the tempo of the ensemble, which helps to ensure that the subsequent [K] gesture is in time with previous material. During this section, the conductor should keep the tempo as consistent as possible, and as close as possible to the indicated tempo.

In Mvt. III, m. 32, the laptop will synchronize the [A] cue to an internal clock, and may not occur instantaneously with depressing the key. At this moment, the conductor should subtly cue the laptop player, and resume conducting as soon as possible after hearing the downbeat as generated by the computer. Percussion 3 and 4 may 'sneak in' if needed. The [N] cue is also synchronized to this clock and occurs exactly six measures later, therefore the conducting pattern should adhere as closely as possible to the timing of the [A] gesture.

As a general note, the conductor and players should actively listen to the electronic part. At times, the players are instructed to 'internalize' the tempo of the electronics to help with tempo accuracy, although moments requiring exact synchronization are extremely rare and somewhat flexible.

Many electronic cues generate a rhythmic pulse of indefinite length (whose end is determined by subsequent triggers from the laptop player). The electronic part is completely ignorant of downbeats. Instead, the conductor may arbitrarily choose the location of the downbeat within the pulse and conduct accordingly. Fermatas are in place to allow pause for hearing and internalizing the electronic rhythms. The given fermata durations are recommendations, and while these recommendations should be followed, there is essentially no risk in spending more or less time in these moments.

Prior to rehearsal and performance, the ensemble should tune to a 440Hz tone, which the laptop player can toggle on and off using the performance software.

Accidentals carry through the measure, for the octave in which they appear.

Trills are played above the primary note, on the accidental indicated by the trill marking.

The quarter tone accidental at the end of Mvt. I is intended to imitate a 60Hz electronic hum, and is between B♭ and B.
II. Multiply and Divide
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1. ratchet (single turn)
2. susp cym
ehn
timp
pno
tbn
bs

3. ob
4. cl
5. fl
II. Multiply and Divide
II. Multiply and Divide
II. Multiply and Divide
II. Multiply and Divide
II. Multiply and Divide

5-7 sec; internalize electronic pulse

7-10 sec attacca
III. Electrogenesis

\( \text{\textit{\text{computer}}} \quad \text{\textit{\text{electronic pulse continues}}} \quad \text{\textit{\text{with precise execution}}}} \)

1. \text{\textit{\text{horn in f}}}
2. \text{\textit{\text{tenor saxophone}}}
3. \text{\textit{\text{baritone saxophone}}}
4. \text{\textit{\text{trumpet in b}}}
5. \text{\textit{\text{trombone}}}
6. \text{\textit{\text{clarinet in b}}}
7. \text{\textit{\text{bass clarinet}}}
8. \text{\textit{\text{piano}}}

\( \text{\textit{\text{p}}}=72 \)
III. Electrogenesis
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= 144 (double time)

hold for 5-7 seconds while electronics fade, use laptop player.

CPU/deductions re. 32 dowshead
III. Electrogenesis
III. Electrogenesis
III. Electrogenesis  \( \mathcal{f} = 108 \)  

5-10 sec; internalize and match electronic pulse
III. Electrogenesis
III. Electrogenesis