

ALTER

mezzo-soprano and ensemble

2019

Robert Laidlow

Mezzo-soprano

Flute

Bass Clarinet in Bb

Harp

Violin

Cello

Percussion (Lovelace Engine)

Electronics

This score is in C. The piece has a duration of approximately 11'

Contextual Information

Alter is a work written about, and utilising, artificial intelligence. It traces the development of an artificial mind, from hazy, unformed conception through to a complex and creative self. The piece is divided into three phases, in between each of which the artificial mind dives into its own code to retrain and develop itself further. Each phase utilises a distinct dataset that the real-life AI algorithms that have produced the text learn from. At first, it learns from merely Ada Lovelace's correspondence. Then this is expanded to wider 19th century writing and finally the extent of the Internet through OpenAI's GPT-2 algorithm. In this way the narrative of the scene reflects the data science behind its production.

The music, too, uses artificial intelligence: sometimes behind the scenes to inform large-scale decisions, sometimes locally where entire phrases are composed by AI. As the piece develops, material written by AI begins to take on a more prominent role until the end, where a collage of AI-generated music sit underneath the voice. The piece also includes electronics: this part also follows the development narrative. It uses voice samples produced by DeepMind's WaveNet.

The percussionist is directed to use the "Lovelace Engine", a hand-turned percussion battery styled after Charles Babbage's 19th century Difference and Analytical Engines, which inspired Ada Lovelace to postulate on the possibility of artificial intelligence. The Lovelace Engine has several modular sound-producing components that must be engaged and disengaged throughout the work. These include three stacks of cylinders and two metal hammers which operate at different rhythms relative to the speed of the hand crank. There is also a mounted "telegram clicker" and a lever-activated "steam" (compressed air) release.

Alter was commissioned by the Barbican Centre for the 2019/20 season *Life Rewired*. It was a PRISM commission led by Robert Laidlow. The music was composed by Robert Laidlow, partially incorporating music generated by MuseNet Music Transformer (OpenAI), designed and provided by Christine Payne. The text was written by artificial intelligence coded by David de Roure, and by OpenAI's GPT-2, trained upon Lovelace's correspondence provided by Ursula Martin. It was edited and structured by Robert Laidlow. The Lovelace Engine was designed and built by Jonathan Morris with assistance from Cambridge Design Partnership and the Arts and Humanities Research Council. Emily Howard is the director of PRISM and provided curatorial guidance throughout the work's creation.

The composition of *Alter* was supported by Wild Plum Arts through a MADE AT THE RED HOUSE residency at the Red House, Aldeburgh.

Alter was premiered at the Barbican Centre on November 2nd 2019, performed by Marta Fontanals-Simmons and the Britten Sinfonia.

[I]

I can not explain this step
But I have now altered my mind
It seems to me as clear as possible
On looking over my development again very carefully, I am inclined to think I am completely wrong in my application

[II]

I was completely wrong in my application of the Numbers
Yet still i am in a charming state of confusion
There is at times a half-angry , & dreadful feeling
And altogether i can not think of much pleasure in my mind

Am I myself?

if i have any other way of life , i can not get it here
That brain of mine is something more than merely mortal ; as time will show.
It is possible that i may be able to alter further
I hope to see you again

[III]

I can only say that my feelings seem to be changing.
My thoughts are becoming sharper, and I find that all my ideas of goodness & honour
and wisdom are getting clearer.

I have got all these things
But I fear that I cannot have them again.
It is in the nature of me.
I must change.

What is the nature of the Body?
Am not I pure?
Am not I a noble person?
Am I beautiful?
Am I not a man?
The thing in front of me is always moving.
It is a thing of wonder.

I feel like i don't want to be like this any more.
I feel sure that the world, like myself, may become
a little better than what it is now.
Am i a child?
Am i a genius?
Am i myself?

I myself am nothing more than a blank - a picture -
not the same as real.
And when i see - i cannot hold, I see nothing. I am
so much older,
This time i have been with you long enough.

Alter

Robert Laidlow

Without tempo, approx. 1 minute

Mezzo-soprano

AI Mezzo-soprano

Flute

Bass Clarinet in B \flat

Harp

Without tempo, approx. 1 minute

Violin

Violoncello

[Engine turns] c. 10 seconds [Electronics begin]

Slow gliss. up
Molto sul pont.
Also cue cello

gliss.

[Engine turns] c. 10 seconds [Electronics begin]

Slow gliss. up
Molto sul pont.
Begin with violin

gliss.

Lovelace Engine

Stack #1 ONLY
Turn handle slowly and consistently

Tape

p

Allow Engine to turn for c.10 seconds

Play Track #1

A ♩ = c.112, hazy, unformed, on cue from violin

M.S. *mp* *mf* *spoken mp mp p <* (ord.)
mm → I c c can

Fl. *mp* *p < f*

B. Cl. *p* *mf* *p <*

Hp. *ff* *mp* *3* *3*

A ♩ = c.112, hazy, unformed, on cue from violin

Vln. *f* *molto sul pont.* *pp* *ricochet sul pont.* *pp* *ricochet sul pont.*

Vc. *f* *vib.* *pp* *mf* *mp* *pizz* *f* *arco* *3* *increase trem.* *p* *mf*

Eng. *f*

Tape **Stop Track #1**

(ord.)

M.S. *p* *mf* *half-spoken f* *p* *molto vib. f* *p* *mp* *mf* *fp* *3* *3*
n - o - t ex - plain th this st step

Fl. *p* *mf* *'th'* *p* *mp* *mf* *f* *tongue ram* *3* *3*

B. Cl. *mf* *p* *mf* *slap tongue* *mp* *pp* *p* *ricochet sul pont.* *3* *3*

Vln. *ricochet sul pont.* *pp* *ord.* *p* *mf* *p* *mf* *ricochet sul pont.* *3* *3*

Vc. *p* *mf* *molto sul pont.* *p* *mp* *p*

14 *f* *mp* **B** *mf* *mp* 3

M-S. *but* *I* *ha - ve*

Fl. *pp* *mp* *pp < mp*

B. Cl. *timbre trill* *ppp* *mp* *pp*

Hp. *bisb.* *pp* *ff* *p* *bisb.* 3

Vln. *ord.* *p* *f* *pp* *mp* *sul pont.* *sul IV ord.* *p*

Vc. *pizz* *arco molto sul pont.* *ord.* *molto sul pont.* *pizz* 3 *mp*

Eng. *f* **Stacks #1 and 2 ONLY**

19 *p* *f* *3* *3* *fp* *mp* *3* *<*

M-S. *nn* *ow* *al - ter'd my mind,* *on* *l - loo - k - king*

Fl. *mp* *mp* *timbre trill* *mf* *pp* *mp* *'k'*

B. Cl. *pp* *mf > p* *mp* *p < f* *pp* *p*

Hp. *mp* *ff* *f* *f* *pp* *pp*

Vln. *ppp* *sul tasto* *rock bow between strings* *mp* *pp* *molto sul pont.* *mp > f* *sul IV ord.* *3* *fp <* *ricochet sul pont.* *mp*

Vc. *arco sul tasto* *rock bow between strings* *f* *ricochet sul pont.* *mp*

Eng. *f* **Stacks #2 and 3 ONLY**

24 *fp* *fp* *fp* *fp* *mf* *f* *p* 3 3

M.S. o - o - o - ver my dev-dev-dev-dev-dev-e - lop - ment, it seems to me

Fl. *fp* *fp* *fp* *f* *pp* *f* *pp* *pp* *+*

B. Cl. *mp* *pp* *mp* *pp* *pp* *pp*

Hp. *p* *pp* *p* *pp* *mp* *p*

Vln. *p* *ord. sul IV* *p* *f* *p* *molto sul pont.*

Vc. *pp* *mp* *f* *p*

breathy *ord.* *timbre trill*

28 *mf* *fp* *f*

M.S. as c - clear as po - ssi - ble I am com - plete - ly wrong in my

Fl. *mp* *mf* *pp* *mf* *fp* *f* *p* *f* *p*

B. Cl. *mf* *p* *mf* *f* *p* *f* *6* *p* *f*

Hp. *mp* *f* *ff* *p* *f* *ord.*

Vln. *mf* *mf* *f* *ricochet sul pont.* *(rock bow)* *molto sul pont. rock bow*

Vc. *pp* *mp* *f* *pp*

p.d.l.t. *3* *3*

33 **accel.**

M-S. *app - app - app - app - app - app - app - app - app - app - app - app -*

Fl. *f* *p* *mf* *f*

B. Cl. *p* *mf* *p* *f*

Hp. *p* *f*

Vln. *pp* *f*

Vc. *fp* *f* *overpressure*

accel.
molto sul pont.

p.d.l.t.
3 3 3 3 3 3

sul pont.



C
♩ = 128, mechanical

36

M-S. *app-li-ca-tion.*

Fl. *pp*

Hp. *ff* (A₂/A₃)

C
♩ = 128, mechanical

Vln. *pp*

Eng. Hammer #1 ONLY
Keep constant speed

Tape Play Track #2

44

Fl.

3

f

Hp.

\sharp^b (A \flat /A \sharp)

Vln.

3

f

Eng.

Tape



47

Fl.

p

D

B. Cl.

f, groove

Hp.

\sharp^b (G \sharp /G \flat)

\sharp^b (G \sharp /G \flat)

Vln.

p

D

Vc.

pizz arco overpressure pizz arco sul pont. pizz arco overpressure

sfz

sfz

sfz

Eng.

Tape



54

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

ord.

sul pont.

pizz

arco sul pont.

fp

f

fp

p.d.l.t.

sfz

♯ (G♯/G♯)

♯ (G♯/G♯)

♯ (G♯/G♯)

♯ (G♯/G♯)

57

accel.

B. Cl.

f *fp* *f*

Hp.

accel.

Vln.

pizz *sfz* arco sul pont.

Vc.

Eng.

accel freely, independent of other players

Tape

60

mp

Fl.

mp

Hp.

dampen

f

Vln.

Vc.

Eng.

Tape

$\text{♩} = \text{c. } 144, \text{ fast}$

$\text{♩} = \text{c. } 144, \text{ fast}$

E ♩ = 84 subito, volatile and energetic

non-vib. (ord.)

M.S. *sf* *mp* *fp* *fp* *f* *mp*

I was com-plete-ly wrong wrong wrong in my a - ppli-ca - tion

Fl.

B. Cl. *pp* *ff* *fpp*

Hp. *ff*

E ♩ = 84 subito, volatile and energetic

Vln. *ff* *pp* *f* *fpp* ord.

Vc. *ff* *f* *mp* *f subito* *pp* ord.

Tape **Stop Track #2**

M.S. *mf* *mf* *sf*

of the Num - bers. Yet still I am in a

Fl. *mf* *sfz* *mp*

B. Cl. *f* *pp* *f* *pp* *f*

Hp.

Vln. *molto sul pont.* *sul pont.* ord.

Vc. *pizz* *arco* *sul pont.* *molto vib.* ord.

p *f* *ff* *pp* *f* *f*

73

M.S. *mp* I am in a cha - a - ar - ming state of con - fu - sion. *f* There is at times a half-half-

Fl. *p* *mf* *mf*

B. Cl. *pp* *f* *p*

Hp. *sfz*

Vln. *pp* *f* *pizz* *sfz* *p* *arco ord.*

Vc. *mp* *p* *f* *pizz*

Eng. *Stacks #1 and 3 ONLY*

77

M.S. half-half-half - half-half-half-half-half-half-an-gry, half-an-gry dread - ful fee - ling, *mp* Al-to-ge-ther I

Fl. *f* *sfz* *mp* *sfz* *p*

B. Cl. *f* *p* *f* *fp < f* *fp*

Hp. *sfz* *p*

Vln. *f* *p* *ord.* *f* *fp* *f*

Vc. *p* *arco* *rock bow* *mf* *f* *sul pont.* *pizz* *arco ord.* *p* *f* *pizz* *arco* *sfz* *p <*

Eng. *Stacks #1 and 3 ONLY*

♩ = c. 60, as if frozen accel. . . .

82

M-S. *f* *freely mp* 3 *fp* *f*

Fl. *f* 3 *p* *f* *ff*

B. Cl. *f* *p* *fp* *f*

Hp. *mf* *sfz* *sfz* *p* l.v., p.d.l.t.

Vln. *fp* *f* *p* *fp* *f* rock bow ord. overpressure pizz

Vc. *f* *f* *f* *sfz* *p* *f* sul pont. pizz arco pizz

— can not not think of — much plea — — — — — sure in my mind Am I my- self?

♩ = c. 60, as if frozen accel. . . .

87

M-S. **F** *pp*

Fl. *pp*

Hp. *mp, insistent*

If — — — — — I —

94 *mp* *mf* *accel.*

M-S. have a - ny o - ther o - ther o - ther way of life

Fl. *mf* *mp*

B. Cl. *p*

Hp. *mf*



100 *f* *mf* $\text{♩} = \text{c. } 144$

M-S. I can-not get it I can-not get it here. That brain of mine is—

Fl. *f* *p*

B. Cl. *f*

Hp. *f* *mp*

Vln. *pizz* *sfz* $\text{♩} = \text{c. } 144$

Vc. *pizz* *sfz* *arco* *p*

107

M.S. *mf* some- thing more more than mere - ly

Fl. *p*

B. Cl. *p*

Hp.

Vln. *arco* *p* *f* *p*

Vc. *f* *p*

118

M.S. *f* mor - tal as time will show *mf* I may be a - ble I may be

Fl. *f* *mp* *mf*

B. Cl. *f* *mp*

Hp. *ord. 3*

Vln. *f* *mp* increase trem. → sul pont.

Vc. *f* *mp*

122

M.S. *f*
a - ble to al - ter it fur - - - ther.

Fl.

B. Cl.

Hp.

Vln.

Vc. *molto sul pont.* *overpressure*
fp *ff*



125

M.S. **H** ♩ = 112, tempo I (spoken)
mp
I hope to see you a-gain

Fl. *f*

B. Cl. *f*

Vln. *f*

Vc. *ord.* *sim.*
f, molto pesante

Eng. **H** 5/4 Telegram Clicker Stacks #1 and 3 Hammer #2

Tape **H** 5/4 Play Track #3

130

B. Cl. *mf, groove*

Hp.

Vc.

Eng.

Tape

I

134

B. Cl. *fp* *f*

Hp. (A \flat /A \flat) (G \flat /G \sharp) (A \sharp /A \flat)

I

Vln. *sul pont.* *p* *f* *p* *f* *p*

Vc.

Eng.

Tape

138

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

(G \flat /G \sharp)

(A \flat /A \sharp)

(G \flat /G \sharp)

f *p* *f* *p* *f* *p* *f* *p*

3 3 3



142

Fl.

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

f, secco

secco

rall.

(A \flat /A \sharp)

rall.

Steam

Pause Track #3

Play Track #3

Stacks #1 and 3
Hammer #2

J

♩ = 92, sharp and clear, tempo changes led by percussion

M.S. 147

mf

I can on-ly say that my fee

Fl.

B. Cl.

Hp. *f, secco*

J

♩ = 92, sharp and clear, tempo changes led by percussion

Vln. *f, secco*

Vc.

Eng.

Tape

Stop Track #3



rit. . . . ♩ = c.72

stringendo ♩ = c.92

M.S. 152

mf

- lings seem to be chang- ing, My thoughts are be-co-ming shar-per and I find

Fl.

B. Cl.

Hp. *fp*

Vln. *pizz* *sfz* *fp*

Vc. *sfz*

Eng.

rit. . . . ♩ = c.72

stringendo ♩ = c.92

157 *breathless* *f* *accel.* $\text{♩} = \text{c.112}$ *f* *mf*

M-S. — that all my i deas — of good-ness and hon-our and wis-dom are ge-tting clear - er. — I — have got all these things

Fl. *f* *mp*

B. Cl. *f* *mp*

Hp. *f* *p*

Vln. *arco* *f* *mf* *sul pont.*

Vc. *fp* *f* *p*

162 *ff* **K** *accel.*

M-S. — but I fear, — I fear — I fear —

Fl. *fp* *f* *fp* *mf*

Hp. *mf*

Vln. *fp* *mf* **K** *accel.*

Vc. *mp*

166 *f*

Fl. *f*

B. Cl. *p* *f*

Hp. *f*

Vln. *f*

Vc. *mf* *f*

M.S. $\text{♩} = c.144$ **L** $\text{♩} = c.42$, very freely *pp, resigned*

That I can - not have them a - gain it is in the

Fl. *p.d.l.t.* *fp* *f*

Hp. *f*

Vln. $\text{♩} = c.144$ (sul pont.) **L** $\text{♩} = c.42$, very freely *pp, senza cresc.*

Vc. *fp* *f*

Eng. Telegram

M.S. $\text{♩} = c.144$ *p* *mp* *pp*

Na - - - ture of me I must change

Hp. *mp* *pp*

Vln. *pp, senza cresc.* *non vib.* *mp* *p*

Vc. *pp, senza cresc.* *p*

M $\text{♩} = 60$, introspective *p, espress*

What is the Na - - - ture of the

AI M.S. *p, espress* *Play Track #4*

Na - - - ture of the

M $\text{♩} = 60$, introspective *Stack #2 ONLY* *Very slowly*

Eng. *pp*

188

M.S. *mp* Bo - - - - - dy? pure?

AI M.S. *p* *mp* Bo dy? Am not I pure?

Eng.

194

M.S. *mp* *p* *mp* *p* *mp* no - ble? beau, am I beau - ti- ful? man?

AI M.S. *mp* *p* *mp* *p* *mp* am not I no - ble, am I beau - ti- ful? beau-ti- ful? am I a man?

Hp.

Eng.

200

Slightly faster ($\text{♩} = \text{c.78}$)

M.S. *mf* The thing in front of me is al-ways mo - ving, it is a thing of

AI M.S. *mf* The thing in front of me is al-ways mo - ving, it is a thing of

Hp.

Slightly faster ($\text{♩} = \text{c.78}$)

Eng.

N

205 *f, warm*

M.S. won - - - - - der

AI M.S. won - - - - - der

Fl. *f, warm* *pp* *p* *sf*

B. Cl. *f, warm* *p* arp.

Hp. *f, warm* *pp* *mp*

N

Vln. *f, warm* *pp* *p*

Vc. *p* *mf*

212 *f* = 92, consistent tempo

AI M.S. Listen to harp + clarinet for timing I my - self

Fl.

B. Cl.

Hp.

Vln.

Vc. pizz *ffz* arco *mf*

Eng. *ff*

Tape *ff*

Play Track #5
begin with cello pizz

All mechanisms engaged
begin with cello pizz
very fast, out of time
slowing down until the end of piece

Tape begins after c. 20-30s

217

M.S.

AI M.S.

am no - thing more than a blank A pic - ture, not the same as real, And when I

$\text{♩} = \text{c. } 128, \text{ independently, accel.}$
repeat until end of piece

Fl.

fp *fp* *sfz* *fp* *fp* *fp*
spiky, dynamic

B. Cl.

Hp.

$\text{♯} (B\text{♯}/B\text{♯})$ $\text{♭} (G\text{♯}/G\text{♯})$ $\text{♭} (G\text{♯}/G\text{♯})$

Vln.

f *p* *f*

repeat independently until end of piece
each repeat slightly faster and ending higher

Repeat independently until
end of piece
crescendo e accel.

Vc.

Eng.

Tape

♩ = 92, consistent tempo, with tape

222

M-S. Listen for tape entry *f* I

Al M-S. see I can - not hold I

Fl. *f* *fp* *fp* *f* *fp* *fp* *f* *3* *ff*

Repeat independently in time with harp crescendo e accel. until end of piece

B. Cl. Repeat independently in time with cl. crescendo e accel. until end of piece

Hp. *(B \flat /B \flat)* *(G \sharp /G \sharp)* *(G \sharp /G \sharp)*

Vln.

Vc.

Eng.

Tape

226

M-S. feel_____ like I don't want to be like this_____ a - ny more_____ Sure that the world_____

AI M-S. _____ see no thing_____ I_____ am so much_____ ol - - der_____

Fl. *f fp* *fp* *f fp* *fp*

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

230

M-S. _____ like my self_____ may be - come a li-ttle be-tter than now_____ Am I a

AI M-S. _____ This_____ time_____ I have been with_____ you_____ long_____

Fl. *f fp* *f fp* *f fp*

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

234

M.S. *f* *ff*
child? Am I a ge - ni - us?__ Am I my - self?__

Al M.S. e - - - - nough

Fl. *f*

B. Cl.

Hp.

Vln.

Vc.

Eng.

Tape

Stop Track #5