Human vs. Machine Decision Making in the Digital Arts and Humanities

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Digital Arts / Digital Humanities

The limits of computing in the arts

» Disclaimer – practitioner
  » Not a humanities or arts scholar
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Definition of Digital Humanities

How do you define Digital Humanities.com

You don't.

— erochest
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The humanities in and for a digital age

— Laurie N. Taylor
Any humanistic inquiry into aspects of digital technology.

— Hugh Cayless
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The art of being human.
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‘We are the only species that consciously creates art’

- E. Albee
‘Our tails fell off and we grew art.’

- E. Albee
Voyager space probe

Art is one of the defining features of being human.
Voyager space probe

But that was the analog days of humankind - 1977.
Voyager space probe

What does it mean to be human now in the digital age?
General Definition of the Digital Arts

Visual and/or sonic art in which digital technology plays an indispensable element, usually from conception to dissemination.
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General

↑ Often involves *Intermedia* – multimedia where media are integrated to the point of inseparability
Usually accomplished with **original software** written by the artists.
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Demo

- IDAH
- Brownfox
Role of digital technology in the arts

"Every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it."

– Dartmouth proposal of 1956
The 2 memory/learning systems

Long-term Memory
knowing "that..." vs. knowing "how to..."

Declarative
Explicit: conscious recollection

Non-declarative/Procedural
Implicit: subconscious abilities

FACTS
Semantic: facts
knowledge about the world

EVENTS
Episodic: events
unique personal experiences

SKILLS & HABITS
ASSOCIATIVE LEARNING

Classical Conditioning

Emotional responses
Preferences and
adversions

Skeletal Musculature

Neostriatum
Hippocampus
Role of digital technology in the arts

"Every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it."

– Not in my experience

IF every aspect of learning or any other feature of intelligence can be so precisely described in terms of explicit symbolic representation that, a machine might be made to simulate it.
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‘Artificial intelligence’

 Dreams have not materialized.
Deep Blue vs. Kasparov
1997

“Proved that a machine could out-think a world champion chess player...right?
Perspective on ‘AI’

- “Deep Blue” vs. Kasparov
- Software could have run on ANY computer
- Just not fast enough for a tournament in 1997.
Perspective on ‘AI’

Software engineers - a crack team, including Joel Benjamin (grandmaster chess champion)
Perspective on ‘AI’

Who deserves the credit for the win against Kasparov, the machine or the programmers?
Perspective on ‘AI’

- Chess is a problem extremely well defined or ‘framed’
- Uses aspects of human intelligence that is easy to codify into easily manipulated symbolic representations
The 2 memory/learning systems

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Perspective on ‘AI’

- Computers cannot (so far) break a frame
Perspective on ‘AI’

- Computers cannot (so far) construct their own frames
Perspective on ‘AI’

- Demo computer ‘art’
Perspective on ‘AI’

- Samuel Barber’s Violin Concerto II
- Notes hand picked
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The limits of computing in the arts

Like any instrument: what it does well and what it does poorly?
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Which is a real violinist?
Fractal Geometry

Recursive algorithms

4.1 Finite and Infinite Length of Spirals

In the same way we obtain that $a_k/a_{k+1} = q$. With that we compute $a_k = a_{k-1}/q = \ldots = a_1/q^{k-1} = 1/q^{k-1}$. The length of the inscribed smooth spiral is equal to $\frac{\pi}{2}y^2 = \frac{2}{3}(3 + \sqrt{3})$. 

Figure 4.9: The golden spiral.
Fractal Geometry

How do these images make you feel?
Fractal Geometry

How do these images make you feel?
Fractal Geometry

How do these images make you feel?
Fractal Geometry

How do these images make you feel?
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How do these images make you feel?
Often used quote about calligraphy:

*Geometry can produce legible letters but art alone makes them beautiful. Art begins where geometry ends, and imparts to letters a character transcending mere measurement.*

- Paul Standard, 1947
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“Art begins where geometry ends…”

...but how?
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Making aesthetic decisions:

‘Works, or doesn’t work’
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The essentially collaborative application of engineering-type solutions to human-type problems.
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engineering-type solutions

↑ ‘Works’ – performs within given parameters (frames) or it

↑ Doesn’t work
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Artists; what works or not aesthetically, at each point in a work of art.
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Machine decision making.
Machines don’t make aesthetic decisions
Artists MUST