A Response to Mind vs. Machine: an article by Brian Christian, March 2011

Charly Yan Miller, October 23, 2018

The article seems to make a clear distinction between mind and machine: the former is responsive to subtle changes in its environment and works with representations in context; the latter of which deals in abstract logic and is consequently rigid and lifeless. I believe that this binary between the mind and machine is false and is rooted not in any essential differences between the two systems but rather in a naivety pertaining to how contemporary AI and programs in general can work and/or a fetishization about the origins of human creativity. It's true that in many programs AI is reduced to mechanical and lifeless *state-machines* — a conglomeration of if/then statements which result in a strict quantization of behaviors and lead to a rigidity and predictability we often associate with machines (*if* I see ball 1m or more away from me *then* walk towards ball; *if* I see ball within 1m of me *then* pick up ball; *if* I am holding ball…)

 Crucially, however, programs structured as state-machines are not cutting edge works in the exploding field of AI research and most of their appearances in contemporary applications are in video games because state-machines offer game designers an immense level of control over AI behavior (thus player experience) and also because AI behavior is quantized and finite the player can quickly identify and learn to respond to AI behaviors which tends to give a better sense of progression and is generally good for player experience. In reality, today there is a huge and rapidly growing field of research involving autonomous agents, genetic algorithms, machine learning and neural networks which eschew state-machines and if/then statements in favour of more robust systems consisting of a conglomeration of simple individual rules, nodes and/or weights which are allowed to interact (with no state-machines which encapsulate and isolate behaviors) and thus emergent properties arise which lead to complex, flexible, creative, and all around more organic feeling systems. The game of life is a simple yet canonical example of a stateless system in which the interaction between 4 simple rules leads to complex emergent properties and awesome visual performances. Products of neural networks and machine learning would be the most contemporary examples of AI which form patterns like humans and creatively reconstitute given materials and/or ideas to create unique products— both behaviors which subvert Brian's description of the machine as cold and lifeless and therefore subvert his binary between mind and machine.

Ultimately the human mind's base unit of thought: the neuron— performs in an equally quantized and binary fashion to the transistor: depolarization/resting, on/off, 1/0… Of course, if machines and brains are comprised of functionally identical building blocks then it follows that any differences in the nature of the two systems must be the product of a dissimilar arrangement of these basic nodes. It is not essential differences between mind and machine but rather simply differences in the arrangement and flow of neurons and transistors— the programming of these two systems— which often make computers seem colder and harder than us. But computers crucially can be *reprogrammed* with relative ease, and therefore it is only current paradigms of AI research which prevents machines from thinking in identically flexible and invested manners as minds— they can get there.

We can come to the same conclusion via different means— *Mind vs. Machine* consists primarily of Brian *gaming* a Turing test by defining and then trying to exemplify humanness. In other words, to use gender studies' vernacular, Brian is overtly constructing and then performing humanity. Once put into these terms it becomes obvious that the idea of humanity is a social *construction* which should be

deconstructed so it is recognized as something fluid that is formed from social conventions and interactions rather than the essential quality that Brian thinks he is trying to *find*— this is my fundamental issue with the article.