

## Statement on artistic practice

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When talking about artistic process, the “artistic” part is for me part inspiration, part craft and part theory of mind. The process involves forming an idea, executing it and communicating it in a way that the projection of the idea is meaningful. Usually, I want the projected idea to produce an individual response that is within the receiving individual’s ontology (but not necessarily the choreographers’). The question to ask is what exactly is being projected? The answer has implications in all the parts of the artistic practice – everything from craft (how do I execute this?) to theory of mind (what common ontologies exist between me and the recipient, and what could exist?).

The traditional discussions around ontology have been by necessity biased towards a neurotypical world view. It is based on a common set of perceptions of what reality is, based on the neurotypical human brain.

To me, a broader view is interesting – to see where we get when we extend the concept of intelligence and subsequently the discussion on ontology. What new do we discover? What new ethical challenges do we find as we venture into uncharted territory?

Not being a technical person by nature or choice, I was surprised that for me in relation to my artistic practice the exploration of the extended ontology was opened up by technology. The other aspect – neurodiversity – was also an unexpected path. It was only after the birth of my son and his autism diagnosis that a new world opened up, again providing interesting insights into an extended view on ontology.

### Machine Intelligence and its implications

In my work, for the past decade a consistent pattern has been evident (if not planned). The dancer inevitably works with a transdisciplinary partner – be it a layer of water, a sowing machine or a 15-meter dress. By choreographing the unchoreographable and by contrasting the movement of a human body with something that lies in a conceptually perpendicular plane I want to get interesting synergies that highlight the essence of movement, non-movement, the subjective and the objective.

It was by chance, in search for an interesting material, that I first came into contact with AI. Artificial Intelligence is software that is capable of solving certain problems that typically require human intelligence. AI has been around for many decades, but it is only in recent years it has become a familiar term to a wider audience. Responsible for recent progress and attention is a technology called artificial neural networks. Loosely inspired by how the brain works, artificial neural networks (“neural nets”) are capable of understanding and working with unstructured data (text, images, audio, movement etc.).

In my own artistic practice, I initially viewed it as an interesting tool. One of my early projects was a neural net, called CHOR-RNN, that was trained to generate new choreographies in my choreographic language. The results were interesting, possibly quite useful, and I co-authored a paper on the subject (<http://www.computationalcreativity.net/iccc2016/wp-content/uploads/2016/01/Generative-Choreography-using-Deep-Learning.pdf>) that was presented at the International Conference on Computational Creativity in 2016.

A key change that affected not only my artistic practice, but linked it to my interest in extended ontology in general and neurodiversity in particular, was the introduction of neural nets that understand text on a semantic level (and can also express themselves in text). It was especially interesting in terms of roles and material, and the blurring of the line between them. An AI that has read most of the books in existence today but has never actually experienced anything first hand will have a different perspective than a human. Can we even talk about perspective? The AI has intelligence, but not consciousness.

Could it be considered a material? It can definitely create material in a way that only humans have been able to, but its process is radically different. Through the differences, we can also get insights into ourselves and our process.

This opens up a lot of ethical questions as well – some specific, such as recognition of authorship others more general as for criteria for rights (the octopus is because of its intelligence, not biological function considered by law to be a ‘honorary vertebrate’ and falls under the protection of animal cruelty laws).

### The semantic and syntactic and the space between them

One of the findings of my work with CHOR-RNN was that it demonstrated that it could capture the syntactic level of my choreographies and could generate new ones in the same movement language. The interesting part however comes from it being able to capture the essence of a work of art by to a large degree separating the syntax from the semantics.

For a human artist, syntax and semantics are not separable. You can’t draw an apple without having made a conscious choice of syntax (i.e. style). Using a neural net, you can actually do that by having one source for the syntax and another for higher level semantics and get a combined result. That becomes very interesting when you put a human observer in the loop. Due to the way our brain works, we will read both syntactic and semantic information in both images.

The dissonance between the AI interpretation and human interpretation provides an interesting space that hasn’t been possible to explore before. This is interesting both from a practical craft perspective and a philosophical perspective. The former because it provides a new dynamic perspective and makes concrete otherwise very abstract concepts. The latter as core tenant of 20-century post-modernist philosophy emphasizes the inseparability of the semantic and syntactic in an ontological context. Or rather that what exists – the ontology and the semantic meaning of it is relative to cultural considerations. As Foucault puts it: “It would be completely contradictory to imagine a knowledge that was not by nature partial, oblique, and perspectival.” Beatrice Han, summarizes Foucault’s views:

“Firstly, the nominalist thesis that it is not through reference to ‘things’ that one defines ‘words’, but through ‘words’ that one can conceive of ‘objects’ produced by discourse. Secondly, the quasi-structuralist claim that since the identification of these ‘objects’ can no longer be achieved through their hypothetical ‘correspondence’ with things, the only way of understanding their identity is to start from the ‘set of rules’ that allows their formation”

With a human in the loop, one could argue for the separation of the ontological and semantic, but when dealing with purely mathematical separation of semantics and syntax, the semantic and the ontological perspective become the same. The “words” that define the “objects” according to the nominalist thesis become the equivalent of syntax that defines the semantics/ontology. The clear separation and universality of the syntactic and the semantic provides a new exciting venue to explore, both as it

provides a view that runs counter to the nominalist view on ontology but also because of its experimental rather than theoretical possibilities. It is something that can readily be explored in an artistic practice without it just relying on very abstract theoretical consideration. This becomes the essence of the choreographic process.

### Diversifying the concept of intelligence

One variation on that theme is the field of neurodiversity – the variation of type of intelligence between humans.

People with autism are often highly intelligent but have a radically different perception of the world compared to neurotypical people. Apart from the ontological question, it opens up a whole universe of ethical questions that in some important aspects differs from other diversity questions. The base argument for the broader inclusion of race, sex and sexual orientation could be summarized with the phrase “race is only skin deep”. The core argument being that regardless of race, sex or sexual orientation we’re all more or less the same. When you step out of the realm of the neurotypical, that isn’t the case anymore. It relates more closely to the argument of cultural diversity as a way of getting other valuable perspectives.

Harvey Blume wrote,

“Neurodiversity may be every bit as crucial for the human race as biodiversity is for life in general. Who can say what form of wiring will prove best at any given moment?” How absurd it would be to label a calla lily as having “petal deficit disorder” or to diagnose a person from Holland as suffering from “altitude deprivation syndrome.” There is no normal flower or culture. Similarly, we ought to accept the fact that there is no normal brain or mind.”

As Thomas Armstrong puts it - with autism, dyslexia, ADHD, intellectual disabilities, and even emotional and behavioral disorders, there is a very unclear threshold from normal human variation to pathology. In his paper “The Myth of the Normal Brain” he writes:

“A major cause of this ambiguity is the emergence over the past two decades of studies suggesting that many disorders of the brain or mind bring with them strengths as well as weaknesses. People diagnosed with autism spectrum disorder (ASD), for example, appear to have strengths related to working with systems (e.g., computer languages, mathematical systems, machines) and in experiments are better than control subjects at identifying tiny details in complex patterns.

People with dyslexia have been found to possess global visual-spatial abilities, including the capacity to identify “impossible objects” (of the kind popularized by M. C. Escher), process low-definition or blurred visual scenes, and perceive peripheral or diffused visual information more quickly and efficiently than participants without dyslexia. Such visual-spatial gifts may be advantageous in jobs requiring three-dimensional thinking such as astrophysics, molecular biology, genetics, engineering, and computer graphics. In the field of intellectual disabilities, studies have noted heightened musical abilities in people with Williams syndrome, the warmth and friendliness of individuals with Down syndrome, and the nurturing behaviors of persons with Prader-Willi syndrome. Finally, researchers have observed that subjects with attention

deficit hyperactivity disorder (ADHD) and bipolar disorder display greater levels of novelty-seeking and creativity than matched controls.”

This makes the case for considering a wider framework when it comes to intelligence and makes the case for considering an extended ontology

### The Extended Ontology

Connecting machine intelligence and neurodiversity may seem like an unusual combination of things – the former seen as technological tool and the latter seen as an ethical issue of rights and inclusion. Their common touching point is however the essence of both – an intelligence that is divergent from the neurotypical human. That opens up many venues of investigation ranging from the ethical to the craft practical. On a meta level it also opens up a more general question – the one of an extended ontology. Most schools of philosophy regardless if they are positivist or post-modernist all agree that our way of understanding “what is” (i.e. the ontological) is highly affected by the capabilities of our senses and our intelligence (neurotypical implied). Extending that intelligence beyond the neurotypical automatically leads to an extended ontology – which is what I’m using my artistic practice to explore.

My artistic practice has three overarching goals:

- The beginning of a definition and a framework of extended ontology that considers the cases of neurodiversity and machine intelligence.
- Finding a way to communicate about it in a nuanced, constructive way
- Practically demonstrating the extended ontology concept through my artistic work.

There are three elements of my artistic practice.

- Doing research on things that are happening within AI and neurodiversity – both artistic, scientific and ethical.
- From that very large field pick a subset that can be tied to a broader philosophical point. I try to keep the broad context grounded in the larger corpus and perspective, while zooming in on a particular part.
- Actively work with material tied to AI, neurodiversity or both. This can consist of practical things such as a neural net that does semantic/syntactic mapping on images and video or somatic practice connected to autism, while taking into consideration other things such as alternative sensory input and interpretation.

I aim for my resulting work to be multimodal (choreography, images, text, sculptures) and try always to anchor it to an artistic, philosophical and ethical context.