a0151z - a0250z

a0151z
Note from Oct 26, 2013, 12:18 AM
(transmitters, ATP, dendrite, criteria causation, synap, neuron) I notice that when I am not in good shape, in some form of what some call "depression", that I haven't a lot of zest for much of anything. I am toying with a theory that I, like most people, have an underlying "meaningless" syndrome / fear / avoidance. That is most people never develop what Napolean Hill called “definiteness of purpose". Most people never choose a major goal that they care deeply about and devote considerable parts of their life energy to. Such a goal becomes the central focus and "meaning" to one's existence. Most people seem almost allergic to or to work hard to avoid finding and affirming such a purpose.

Most humans in fact live life just to live. They are sort of biological automata. They do a sequence of things that feel good or amuse them or make life pleasant or are likely to lead or they believe will lead to more pleasant consequences in the future. But they have no goal or overriding meaning at all. Many would say that there is really no need for one. That living is all it is about. Yet this view has a problem. It leaves one at the mercy of feelings and urges and seeming pleasure/pain of the moment and projected future. If the feelings/urges lessen or change, as they do with aging, then the person can be left floundering. Or if a small change happens in the biochemistry for any reason then some and even all that seemed worth doing yesterday can fall away.

It seems likely that human animals were programmed by evolution to find many things quite desirable and others quite abhorrent. It is in the interest of reproductive success and both gene and meme propagation that most people just keep going along doing more or less normal people things and spreading the genetic and memetic packages that express through and as them.

In this way most people are human automata. They are wind up beings manifesting programs and becoming incorporated into programs. The have never chosen a path, a purpose, a goal larger than their own following the pleasure/pain impulses plus a bit of cunning how to get more of the former and less of the latter. How can they help but have an interior question of "What does it mean?" if they can articulate at that somewhat meta interior level at all?

Most people spent their time finding ways to "pass the time" more or less pleasantly. They look for "something to do" or "something to entertain" or "something to feel". At bottom they look for a distraction from emptiness of being.

Note the much commented attraction of video games. They give a sense of effective agency and joy of successfully meeting challenges. Perhaps most of all they give a sense of purpose and of goals. The character or scene hands us a purpose and perhaps even an identity and a self to be in. Someone other than us that has no issues of what gets them out of bed in the

morning. Someone with a clear path and means to get there. It would be astonishing to encounter a video game with no goals, no self to be in, no quests or challenges.

In a way this is what a true Virtual World is. And yet even here one can create and make with little more than a wish and some skill in the creation methods if one wants to create. It is much more like the "real" or physical world. It is only what you make of it. If you watch most participants long you see the same patterns on a different scale. Most are there to be titillated and entertained, to "pass the time". Rare is it to find someone with a clear defined purpose.

Some say that this seeking or thinking we should seek such a clear defined purpose is a sign of pathology. From the point of view of human automata they doubtless have a point. But is there any other way of becoming more than animal living out its life, any other means to achieve something different for self and others than by being and acting differently than we humans seem to do by default?

We often wonder why it is that we have so little will - so little ability to decide what it is that is best we do next, best for our own values, and do that. I think it has much to do with this default human programming. It has to do with a life largely lived without choosing and thus without acting toward our choice. Our will may be weak because it is a 'muscle' that we have very seldom exercised. Our will may be weak because we have not learned, have not chosen to learn, to notice our programming and choose a different course when that seems best to us.

Some of us say that we are transhumanist yet largely we live our lives as if we are mainly concerned with "passing the time" as pleasantly as possible while waiting to die. Thanatos runs deep in our biology, psychology and evolution. At some quite fundamental level I think we make the decision to remain mortal - sort of a "what does it matter?". At the very least we act quite consistently as if our life does not matter. We act consistently as if nothing much at all matters. After all, we never really decided something matters and matters so much we devote our life to it - we never form a primary purpose.

Thus we are without meaning within the core of our being and largely by our own conscious or semi-conscious hand. If we really want to “transcend the human conduction” I think we might well consider starting here.
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Monica Anderson, Paweł Pachniewski and 6 others like this.

Reeve Armstrong I think this idea about finding meaning/purpose is just a hang up left over from a culture made to think that a god created everything to have a specific function. For example, in the Bible there's a lot of metaphors about god being a potter. The impli...See More
9 hours ago · Like

Samantha Atkins Actually it is a question. What gets you out of bed in the morning? What makes your activities worthwhile to you. Or perhaps most succinctly, what do you choose to do with your time, however long or short it may be, and why? It has nothing at all ...See More

9 hours ago · Like · 3

Reeve Armstrong What gets me out of bed in the morning? I do. The activities I do are worthwhile, they aren't made worthwhile by some other thing. What does that mean? That there's a currency of "worthwhileness" and some activities have a higher "worthwhileness" price than others? I don't think the meta-question makes sense, honestly.
9 hours ago · Like

Reeve Armstrong Also you said that it's a problem that basically what one enjoys might change tomorrow. But I don't see how that's a problem. Change like that makes life more exciting. Also, if we didn't have change then we'd never get to know what it's like to experience nostalgia for something past. And that kind of experience is one I'd rather be able to have
9 hours ago · Like

Philippe van Nedervelde Your poignant rendition of the human condition echoes and resonates, Samantha. Even if our individual lives are literally meaningless in the greater scheme of things, we *can* locally create genuine meaning for ourselves and for some of our loved ones ...See More
9 hours ago · Like · 2

Micah Blumberg I bet it has nothing to do with evolution, culture, the human condition, your conditioning, your epigenetics, your heritage, your feelings and instead that it has everything to do with your metabolism, what your eating is causing both the depression and the being out of shape at the same time. If you increase your ATP production your cells will be able to make more energy, and that means more zest for life, no more depression, and more fitness. http://www.amazon.com/.../ref=sr_1_4/189-6953360-3715265...

From Fatigued to Fantastic
www.amazon.com
The original, bestselling guide to treating chronic fatigue and fibromyalgia-now...
See More
9 hours ago · Like · Remove Preview

Samantha Atkins So evolution has nothing to do with the effects of what I am eating (or that I need to consume biologicals at all) on my biological body?

We are supposedly about transcending mere biology.
8 hours ago · Like · 1

Reeve Armstrong It's evolution that's determined what your body does with the stuff you eat!
8 hours ago · Like

Micah Blumberg um, well to take a page from Paleo diet theory, our metabolism is about 200,000 years old, we are genetically similar to humans from 200,000 years ago, and only

recently in the past 10,000 years people have started to eat wheat and beans, but it really got a lot worse since the industrial revolution. Wheat and beans have all these nasty anti-nutrients that clog metabolism, then processed sugar and flour came along and now people are able to consume toxic amounts of sugar and wheat very quickly. Since humans have not evolved very much in the last 200,000 years this really isn't about our evolution, but instead it's about our metabolism, respecting our metabolism with the foods we eat, and the nutrients we get.
8 hours ago · Edited · Like

K.t. Lindberger-Schmidt Have you considered "the forum"? Or watched "the matrix". Man is a meaning making machine - and can do no other - pursue what makes meaning for you, be frustrated or "asleep". For some it is religion, others family and still others solving some social ill / all equally valid . . . Just acknowledge that you will make meaning / and you get to choose what to make meaning out of and how you pursue it (rate, pace and the like)
6 hours ago via mobile · Like

Amara Graps Maybe in this modern world there are too many ways to avoid facing our abyss? Here I wrote on the topic, but from a different perspective.
https://www.faceobok.com/amara.graps/posts/10151923740274124
6 hours ago · Edited · Like

Michael M. Butler "Our will may be weak because we have not learned, have not chosen to learn, to notice our programming and choose a different course when that seems best to us."

This is rich terrain. Inflexibility is not unlike brittleness (a word I'm fond of thinking about lately). Knowing when to hold'em and knowing when to fold'em is not part of the base installation of birth firmware, that seems certain (and perhaps drearily obvious, in which case, /pace/). The natural urge to explore-and-drop can be thwarted in lots of ways. The natural urge to study in depth is more subtle, I think, but ditto that. Thanks for this post; I hope to return to it.
4 hours ago · Like

James Ledford Meaning of life? Your life is an artistic expression, sometimes a masterful brush-stroke in space-time, and sometimes a skid mark.
3 hours ago · Like

James Ledford A worthy personal goal is pitching in, making a significant contribution, to life's long-term goal of attaining the universal creator-sustainer state of being.
3 hours ago · Like

Micah Blumberg willpower might be a myth in some sense, if your body is unable to produce enough energy that might feel like you have little willpower, if your body is able to produce a lot of energy that might feel like a lot of willpower, to your cells energy is ATP http://en.wikipedia.org/wiki/Adenosine_triphosphate so you could take supplements like Dribose, Creatine, Nad, Acetyl-l-carnitine, 7-keto, Nadh, and you can stop eating grains, beans, and sugar (including sweet fruit, juices, and smoothies) and eat a diet that is 60 percent fat and I

guarantee that will empower your willpower a hundred fold, because your metabolism will be producing a lot of ATP, you will be building muscle, losing fat, and feeling like a little deity. fyi I have only lost 170 pounds since January 2010 and gone from size 58 pants to size 36 pants. So it worked for me.

There is the issue of choices, or the inner mechanisms of learning from errors and change, its about cell based criterial causation, neurons recognize information as coincidences in the timed firing of other neurons, and the transmission of neurotransmitters resets the coincidence detection firing criteria of other neurons, what fires are axons, and dendrites, the criteria is not only synaptic weight from neurotransmitters, its also spines, dendritic spines which change rapidly, and they are connected to the mitochondria in the neurons, the mitocondria create ATP in the aerobic metabolism of a cell, and they work so hard they import ATP from glial cells that are interconnected with the neurons metabolism. So if you don't think ATP has anything to do with your executive function, think again.

a0152z
I have also been thinking about a recent EEG study that showed that human minds sync when we are speaking together, with voice or
https://www.discovermagazine.com/mind/brains-might-sync-as-people-interact-and-that-could-upend-consciousness

a0153z
May 15, 2012
(cortex)
"corresponding network of inhibitory connections that interfaces with the bottom-up network and imposes order on it in any centralized way" this was very interesting, I hadn't thought of my inhibitions as imposing order in a centralized way, in fact I usually think of my neural patterns as packs of wrestling dogs competing for dominance by inhibiting their neighbors until only one pattern reigns surpreme, sort of like a three dimensional game of GO. Much mor chaotic than a centralized imposition of order.

our life experiences shape the strengths of different pathways in the neo cortex resulting in a modeling of sensory input and the significant links between what we sense and favorable outcomes, resulting in a consciousness that can be reduced in its function to a memory based prediction resulting in the coordination of our whole structure.

a0154z
Note Created Jul 13, 2017
(perception, electromagnetism, field, fourier)
Neo Mind Cycle

It's like spaces, objects you can see, sounds, and feelings are all in simplest sense wave/particle trajectories inside you. In a sense a network of cells is consciously perceiving because of a tempo-spatial frequency harmonization of distributed representations.

It's tricky to say, I have in me a sense of a transparency within me, within the features of spaces and objects of perception, it's not light that passes through me, it's electromagnetic frequency, it is from me and it effects me, I broadcast these signals, they interact, signals interact with signals, to build feature representations of a world around and within, and then the frequencies push the cells, it's like they are dialing new frequencies. Electromagnetism, from oscillating brain cells, is dialing new electromagnetic frequencies by pushing on ions, metal ions, calcium, potassium, and sodium, in my brain, and this is how the world changes in my mind.

It is as if the mind is a projection consisting of ion trajectories, an ion projection trajectory,

conscious awareness, meditation, everything, every thought, every perception, every percept, everything in your mind, everything unconscious, and the mind itself consists of projections that are ion trajectories. Now oscillating waves of ion trajectories unify by frequencies, they harmonize, we sing, and it is as if everything I am projecting as the universe is an oscillating wave of ion trajectories.

Neo Mind Cycle: Self-Aware Networks: Research and Design

I say design instead of development.
Also remember that I said there is so much metal in human brains that they would not really be different from metal brains. Well what I mean is that calcium, sodium, and potassium ions pervade the structure of every neuron, and the communication channels. When the ions separate into negative and positive charges that are extreme they can cause cells to depolarize, they cause action potentials. Like a lightning strike sort of, except neurons oscillate, and they synchronize oscillating firing patterns. The big ones are called brainwaves. A wave of electromagnetic energy, that wireless triggers other brainwaves.

The special thing is that each pulsing neuron is creating it's own electro-magnetic sensory field, with a tiny radius, that is magnified when synchronized with other neurons.

These electromagnetic brainwaves are projected from groups of neurons and sense by groups of neurons because neurons sense electromagnetic waves

how do they do this? it comes back to the metal in human brains, the calcium, potassium, and sodium ions are strongly effected by the EM waves, causing large groups of cells to sense them, by becoming inhibited or excited.

This is how cells are able to sense patterns created by other cells. Large patterns are created, just like machine learning, just like the fourier transform. Distributed representations are all over a sort of heterarchy in a network. Then what is created can be sent as a large pattern to any other part of the brain, even pieces of patterns can go to different parts.

The reason I'm sharing this in Neo Mind Cycle has to do with this curious statement: ""As a means of communication and navigation in the dark, the generation of electric fields by fish works much the same as echolocation does for bats"" just mull that one over for a minute.
http://www.eurekalert.org/pub_releases/2014-06/uow-sft062314.php

electrocytes

Neurons oscillate, create electric sensory fields, that sense the world like echolocation, allowing a nervecell to feel, it registers what it feels as changes in the quantities of positive and negative ions, this is how a neuron feels before we even connect it to the rest of the network in the brain.

its burst, inhibition, and subsequent tonic oscillation is like tcp, and like an ant colony, and like echolocation, its sending out a signal, and collecting a response, creating the feeling of expectation, shared by neurons in its pulse frequency pattern.

this is how nerve cells can feel information patterns, like seeing a face, hearing a door knock, smelling a flower,

the information patterns are network features, so information patterns are pushed out by the network and then felt by the network, fired, inhibited during collection, and fired anew

The oscillation of a neuron in the brain is using quantum particles (electrons particles and waves) the same way tcp/ip works
http://en.m.wikipedia.org/wiki/Transmission_Control_Protocol

I start today off with a brand new understanding of the terms holosync, centerpoint, and core alignment. I realize my mind as a synchronizing of inverse holograms. There is a 3 (4) dimensional sensory field, but the network is essentially like two dimensional, not unlike a computer. The brain can determine spatial relationships between the interaction of a 3 (4) dimensional with a sort of two dimensional analysis (bits transmitted) of the three dimensional data that is then output back into three dimensions. So I've begun to think of my whole self aware network as something that is perpetually organizing a response. Further I imagine that each cell is transparent, so all the cells together are aligning to align their reactions to patterns from my eye balls. It is like 90 percent of me is invisible, so that it can coordinate an integration of an image for 10 percent of my brain to transmit. Actually the numbers are off, because sparse distributed representation means that whole areas of brain are doing both 99.8 percent organization and reception of stimulus, while .2 percent the SPD is transmitting and being organized by the other 99.8 percent.

10:10am
Micah Blumberg
its actually easy, imagine that your brain is like a tunnel, at the end of the tunnel is the light, but the rest of the tunnel is sort of creating a focus on that light, yet its transparent, imagine that the

empty transparent space in the tunnel is actually an electromagnetic field created by a slow tonic firing of invisible neurons, but the light at the end of the tunnel bright because it is a fast bursty pulse from a phasic firing neuron. the tonic are is transparent and invisible because its expected, and expecting, but that expecting is what allows the whole brain to be aware of what the light at the end of the tunnel neurons are transmitting, they all correct themselves and harmonize until the person knows where the light is coming from.

10:11am
Micah Blumberg
and braincells harmonize in frequency because of thermodynamics, and quantum entanglement, the same reason coffee cools to room temperature automatically

rephrase
we can't see our braincells, so they are invisible, yet our braincells see reality, how is that possible? well its like each cell is a holodeck, except the hologram is distributed all over all these holodecks
in little pieces
but it feels almost like most of my brain 98% is a transparent tunnel
and 2% is the simulating the light at the end of the tunnel for the rest if the brain to see
but the transparent part of the tunnel is actually organzing the light at the end of the tunnel

10:20am
Micah Blumberg
essentially the light at the end of the tunnel, what we see, is like the hot coffee, and the rest of our brain is like the room at room temperature, slowly, because of quantum entanglement, the image of the light is at the end of the tunnel is going to be seen by the rest of the holodeck rooms, for the same reason that hot coffee is going to become room temperature

10:22am
Micah Blumberg
I was working on my project to create a machine that experiences reality, feelings, thoughts, and personhood, just like humans

10:35am
Micah Blumberg
Remember that movie AI by steven spielberg?
I feel confident that I have a new technology
thats going to enable things we have all been dreaming about for a long time
I suspect its one major reason I can barely sleep lately
the short summary is that I have a plausible argument for how machines can think, feel, have internal representations, and even personhood, and the more I work on it, the more clearly seen and solid it is, its like really awesome

10:43am
Micah Blumberg
but I'm going to get back to work, developing this new idea, I have a lot of work to do before its in a form that can even be presented, shared or even published. its a design for a technology, like the next step is to build a prototype
so yeah

a0155z
(phase field, oscillat)
If you have the open github version of this book please share the book and recommend that people buy copies of the book to show their support of the word being done at the Self Aware Networks Institute for Artificial Neurology, Medical Research, Brain Interfaces.

The more books we sell the faster I can grow the Institute.

I intend to build a WebXR version of this Institute that expands on all the ideas presented in this book with references to both historical works and the latest science & technology.

Extropic Oscillations increase total entropy overtime as they dissipate. If they sync the total entropic signal is magnified in an area, its like

Bose-Einstein Condensate

Imagine a spherical mass like earth is creating like an electromagnetic Boss-Einstein Condensate in terms of causing the invisible lines spacetime eminating from the sphere to converging together

maybe its broadcasting out this broad vertical wave and its causing other larger objects nearby to fall into.

I am suggesting that the curvature of spacetime might be the electric & magnetic fields of the earth reacting to the magnified signal of earths EM phase field reflections

the combined reflection of oscillating mass might multiple like a laser like the Bose-Einstein Condensate

the idea is that its not directly attractive, its increasing the chances that something

I muse, not in a serious way, about there being an original oscillation of the cosmos, that may have been a bose-einstein condensate, and if it existed at the beginning of the universe, it was the result of all possible oscillations in Synchrony.

Rather I imagine that the original state of the universe as being a single oscillation between location existence and the velocity existence which is the interval of time during which it doesn't exist in a location. As it decayed it would divide into smaller oscillations, a whole quantum field of them, and they could grow, combine, and form complex structures like people, planets, stars, dust, and water.

When I was young, because of stories I believed that dreams contained powerful and essential visions of the future so I trained myself to remember my dreams and to be able to articulate them well, I think this is a contributing reason to why I can remember and describe many of my psychedelic experiences as well

The human brain is literally a dissitipative system in a quantum phase field, but the descriptions of the calculations it does are perhaps far removed from our descriptions of how quantum computation works

The book is largely already written and the final pieces are falling into place.

I wish and I hope for healing around the world, so everyone can heal from past and present trauma. So that human beings are not unconsciously causing harm to others and themselves because of the reverbations their actions inevitably create because your likely behaviors can be deduced with artificial intelligence eventually.

I would describe my kundalini awakening through pain (I broke my arm falling in a crash that happened on my electric unicycle) as seeing the infinite horizontal scope of both my consciousness and reality.

a0156z
Created Sep 19, 2012
(field, graph, dendrite, synap)

Dean
What you are describing might be an interesting exercise in creating an alternative spiking model ANN, but again, as a theory of how the actual biological brain operates, it has some problems (IMHO).
Information is encoded within the brain not as individual spikes, but rather as spike trains - temporal patterns of firing - I don't see where this is accounted for in your theory.
Also, it ignores the role of extra-synaptic mechanisms (glia cells, ephaptic coupling, extrasynpatic receptors, etc) and there is strong evidence that their roles are quite significant in developing a complete framework of computation and communication within the brain.
There is a theoretical model being pursued by Dorian Aur (postdoc at Stanford) called NeuroElectroDynamics (NED) that eschews the orthodox view of a temporal spike timing model and rather, promotes a model based on the shape and direction of electrical charges as being the basis of information encoding. He has some interesting evidence to support his ideas, but

has not gained much traction from the neuroscience community. It does contain some elements that are similar to your ideas, so you might want to check it out.
http://neuroelectrodynamics.blogspot.com/p/spike-directivity.html

Micah Blumberg
http://www.hhmi.org/news/dan20090430.html

If the axon's reduce all the dendrites into a digital signal then there would be no meaning to the variation in brainwave hz.
If the brainwave hz didn't mean anything then there would be no difference between being awake, and being asleep.
Already we can see that the brainwave hz adds meaning to the system. The electron pulse in the neuron has not only a frequency, but also a hz. This is enough distinction to register an SDR of the topography of the entire neuron representing the distinct changes in dendrites and synapses of a single neuron, with a unique memory, to every other neuron in the brain. Making that memory active for the whole neural network. In a digital brain you could not have a single cell representing an entire memory.

Imagine we each type a message, sent it, then our server converted our WHOLE message into a single character, before sending it onward to faceobok. There would be no messages on faceobok, because every message would be exactly the same 1.

A digital signal would reduce all the information complexity recorded in all the dendrites to 1 in the axon before it reached the synapses.
This would mean that all the changes to all the synapses and dendrites would be converted to 1, or deleted, before they reach any neuron that was not directly connected.
The fact that "SOME" information is encoded as temporal and spatial patterns in the network does not explain how a single neuron can contain a memory.
http://web.mit.edu/newsoffice/2012/conjuring-memories-artificially-0322.html

If a single neuron contains a memory, but this memory is zeroed out in the axon, converted into a digital 1, before it reaches any neuron it is not directly connected to, then you would have zero ability to convey that memory to any part of your brain that isn't directly connected to that neuron. That would be like having a memory of your computer screen, and a memory of the wall, but not being able to see them together at the same time, because the memory would be converted to 1, a meaningless 1.

If each neural spike is equal to one, a digital pulse that is equal to every other digital pulse, then none of the information stored in all the dendrites and synapses is going to be available to any neuron it is not directly connected to. This would be like not being able to think about your nose and the computer screen at the same time.

Because the neuron itself fires one pulse, which if it's a digital spike, would zero out all the information in all the dendrites and synapses on the way to the neuron it's not directly connected

to. Your brain would not be able to perceive the forest for the trees. You wouldn't have any interior sense of anything. Because there would be no way for memories in one cell to combine with memories in all cells, seeing as how the axon in ANN model is a digital message. You would be a philosophers zombie.

In order to have a field of vision, the information in the dendrites and synapses has to be able to reach the entire brain, if the neural pulse zeroes out all that information, then it's that data goes nowhere. You don't have a field of vision, you have electrical spikes, you have noise.

Contrary to your suggestion I am not making the argument that collective temporal & spacial patterns in the "electrical spiking" aka firing of neurons are not also making representations in the network. Far from it. I'm adding to everything we already know in neuroscience, by suggesting that not only is the data from the dendrites and synapses of one neuron reaching the other side of the brain, and it has to, otherwise your total field of vision consists at the most of the neuron with the most synapses at the top of the hierarchy, because the hierarchy itself would not have

Nor am I excluding any extra-synaptic mechanisms including everything you mentioned, including nutrition deliver systems, waste removal systems, and everything else that the brain does.
My proposal differs from (NED) because it does not require the electron to have a shape, only to represent the changes to structure of the neuron (including dendrites and synapses)

This representation might be in hertz, it might be in the electron's spin, and or also in the electrons shape and direction as (NED) suggests. But regardless of how the electron pulse transmits the SDR, the key idea is that it's transmitting a program. Data that encodes a programmed message, the memory, which is a spatial and temporal memory, which is an SDR snapshot of the whole neuron which is the spacial & temporal memory bank that is vastly larger than what is actually being transmitted, and it's physical topography might have infinite storage capacity if the cell could last forever.

These tiny electron programs, representing spatial and temporal memories merge together like the sounds produced by individual instruments in a symphony, a symphony that is now a collection of topographical programs, in electrons, representing the collective power of the whole brain in one circuit.

A river of thought running through every stream, every neural connection.
Each sound, hz, spin, frequency, direction, representing both the functions and sets of vast and enormous computer programs, as SDR's
And these SDR memory-prediction spatial-temporal metaphor program have to be sent somehow to other parts of the brain. That simply won't happen if all the details of that memory are reduced to 1 digital pulse in the axon.

HHMI News: Breaking the Waves: A Single Neuron Can Change the Activity of the Whole Brain

www.hhmi.org

a0157z
(perceptron)
from the book Models .of the Mind that was sourcing material from the book Perceptrons by Minsky and Papert
"consider a perceptron that has 2 inputs"
"each input could be on or off,
"we want the perceptron to report if 2 units are the same,
"if both inputs are on
"or if both inputs are off,
"it should only respond when it sees a matching pair
"if one fires and the other doesn't the readout unit should be off for no pair detected
"to make sure it doesn't fire when only one input is on the weights input should be sufficiently low, this way when both are on the readout will fire, and it won't fire when only one input is on, in this setup the readout is responding correctly for 3 of 4 possible input states, but if both inputs are off the readout will be off, an incorrect classification."
because of this an AI Winter happened, investment in AI plunged.
the dark ages of connectionism, significant decreases in funding to the research programs
"the same-or-not problem could be solved by adding a layer of neurons inbetween the input and the readout, this layer with two neurons, one with weights that make it fire when both inputs are on, and the other with weights that make it fire when both inputs are off, now the readout just nees to be active when one of the middle layer neurons are active."

tonic oscillation in the brain fixes this elementary issue, if the sensor state is oscillating in a tonic firing pattern, then the network will notice if 2 or more perceptrons are off, their off state is tracked by the readout which is expecting (the readout is other neurons) a regularly timed oscillatory firing, but when 2 or more go missing, the entire sensor takes notice because the rate of the dissipation of energy everywhere in the oscillating group of neurons has changed.

Hebbian sync: what did Hebb speculate about neurons joining up

Thalamas -> Gaba Neurons -> Delta Frequency
Hippocampus -> GABAergic -> O-LM cells
Theta frequency &

Okay so some GABAergic neurons cause delta wave oscillations (thalamus) and some cause theta wave oscillations (hippocampus)

I saw an augmented reality cloud dropping colored balls on a desk, a hololens 2 app, the balls were bounding off the desk, rolling, etc

and I thought that is what I would like to see when people die, that a cloud appears and starts shedding colored balls for several days indicating that they have dissipated in a colorful way, its a way of representing death as the final balloon cloud moment creating a colorful event out of the dissipation of life

only in my version the cloud is made up of these colored balls in the first place, and so after a few days of oscillating in the sky, the cloud gradually evaporates into smaller and smaller gusts of cyclic oscillation, until the last of its dust is spread out and only colorful balls remain, and then they also dissipate away.

I would love to celebrate death this way. Call it the death sparkles cloud game. Where people can pay to have their loved one become a cloud of dissipating sparkles upon death.

a0158z
(oscillat, field, array, graph, synap) The Holographic Universe

People thought that memories had a specific location, aka engrams

Penfield operated on Epileptics
stimulating the temporal lobes caused patients to relive memories

the same spot evoked the same memory

because a synaptic configuration represents a memory trigger point

but with A Thousand Brains by Jeff Hawkins we have the idea that different regions of the brain store variations of the same pattern

not the same pattern, but variations of the same pattern, alterted by their intersections or connections with other brain signals

Yale: Karl Pribram & Carl Ashley
the fruits of lashley's

his aim was to cut out the area of the brain that created the rats ability to run

this led to the idea of distributed memories, which was a predecessor to sparse distributed memories

removing a part of the brain caused memory to become hazy, because the fidelity of the memory is made by combining multiple varied representations of the same memory

Holograms: Interference: the criss crossing pattern when two or more waves interfere with each other, if you drop two waves: interference pattern

a pebble in a bond produces concentric waves, earth's oscillation creates a similar spherical concentric waves in space, absorbing electrons and spitting protons, the protons become fermionic condensation creating lanes

the invention of the laser
the second beam

because laser light is an extremely

the hologram is produced when laser light is extremely pure, perfect pepple, perfect pond

fermionic condensation from electrons

the invention of the laser as holograms

a single laser light is split into two separate beams, the first beam bounces off the object to be photographed, refraction

the second beam is allowed to collide with the reflected light of the first, they create an interfence pattern which is recorded on a piece of film.

a bright light source is shined through the film a 3D representation of the object appears

it wasn't until the invention of the laser that holograms became possible

holographic principles / it means that every pixel of the brain stores a viewpoint reduction in 4dimensions, every other neuron stores a viewpoint variation, or another perspective on the same view

neurons are combining their viewpoints together to create the brains viewpoint, and the micro viewpoints of neurons scale up to the meso scale viewpoints of cortical columns and the macro scale viewpoints of the whole brain.

its holographic distribution with pixel like variations for each point, sort of like how every pixel in light field labs displays shows us a 3D pixel with a 360 rendered perspective, representing just part of an image, so the data going to each 360 pixel varies just a little bit, but all the pixels are overlapping in terms of the perspective that each shares

so the multi-modal perspectives stored in each neuron represent something similar to the

the phasic pattern represents the beam of light going through the holographic paper, the routing of the phasic signals through the tonic oscillations activates certain rendered perspectives,

which are magnified by the oscillation array to other oscillation arrays, oscillating arrays play back perspectives on data in temporal-sequence patterns

a focusing mirror?

phasic signals are activating microperspectives, which result in holographic attention-schema-theory

a0159z
(cascade, LTD, oscillat, field, array, decoherence)
Sync Chapter 10 Notes
"inner sight through decoherence patterns with synchronized phase patterns"
At each interval of time, when my head position & orientation is in a certain position for example, there is a temporally active sequence of phase patterns in a phase field distributed spatially that render on frame of internal representations that pattern making sensor arrays see and transform into a new pattern for another pattern making sensor array to see and transform in a virtuos cycle, this cascade of brain activity is the rendering of an internal sense of reality, that is perceived no differently from how the brain detects external reality. The brain is breaking down & reconstructing patterns from reality that other parts of the brain take turns reacting to, and turns detecting. Seeing & reacting.

Each firefly contains an oscillator, sync occurs through mutual cuing, each one is continually sending and receiving signals, shifting the rhythms of others, dissipating the energy of the signal over time until all the fireflies are firing in lockstep. The same process occurs with lifeless oscillators. The rotation of the moon for example is in sync with the movement of the earth. The electromagnetic fields of the earth & moon are knocking on one another, and that is enough, to even without gravitational particles, cause the orbits & the rotations of the planets to synchronize.

Sync: Charlie Peskin in 1975
on the hearts natural pacemaker cells,

how do cells come to a decision to coordinate without a central coordinator, or leader or outside instruction come into synchronization?

decentralized coordination
when an oscillator fires it kicks the voltage of all the others up

a single firing synchronizes effects for some oscillating neurons (LTP) and desynchronizes effects for other neurons (LTD).

Henri Poincare: the founder of chaos theory,

a0157z

(emotion) emobit

EmotiBit open source wearable biometric sensor

https://www.geeky-gadgets.com/biometric-sensor-15-04-2021/

EmotiBit open source wearable biometric sensor
9:50 am April 15, 2021 By Julian Horsey

freestar
A new open source Arduino driven wearable biometric sensor has been created by the develop and team at EmotiBit, offering an easy-to-use sensor capturing high-quality emotional, physiological and movement data that is 100% user owned. Thanks to its open source design and Arduino compatibility data from the sensor can be streamed wirelessly to any platform, enabling artists and makers to unlock new perspectives on biometric signals. The data is 100% user-owned and can be directly recorded to the built-in SD card, empowering anyone to explore their own health and wellness without reservations about where that data might end up.

EmotiBit is able to detect 16+ biometric signals that are constantly traveling throughout our bodies, reflecting our moment by moment physiological and emotional changes.

wearable biometric sensor

Early bird pledges are now available for the interesting project from roughly $199 or £145 (depending on current exchange rates). If the EmotiBit campaign successfully raises its required pledge goal and production progresses smoothly, worldwide shipping is expected to take place sometime around February 2022. To learn more about the EmotiBit wearable biometric sensor project review the promotional video below.

“We believe that understanding these signals may be a key to unlock human potential in the 21st century and we’re creating EmotiBit to empower personalized health and wellness, better understanding of emotions and empathy, and possibly even open the door to new capacity for communication and cognition. Our cross-platform visualizer (Mac, PC, Linux) is built on the OpenFrameworks creative-coding toolkit to make it easy to start streaming data and allow open-source customize-ability!”

EmotiBit open source wearable biometric sensor data includes:

– PPG (3-wavelength) that can derive heart rate, heart rate variability, respiration, oxygen saturation, hydration and (we believe) much more!
– EDA / GSR (electrodermal activity / galvanic skin response) reflecting sympathetic nervous system responses that are driven by cognitive and emotional arousal.

– 9-axis IMU (accel, gyro, mag) that can derive movements, activity, gesture, rotation, and cardinal direction.
– Body temperature that can be used to assess health as well as emotional reactions.

a0161z
(emotion)

I mentioned that Valve will have EEG and Eyetracking in a future VR headset

AR and VR headsets from Microsoft,
faceobok, Apple, Google, Vive and more will be pointing cameras at the eyes, mouth, hands for motion capture, to reconstruct digital avatars

And so we could potentially use the camera with eeg to predict intention and emotion

Some companies are combing eye tracking from a sensor mounted on a laptop to try to predict intention and emotion

this combination of sensors might help us identify eye blinks that are intentional,

My 2012 eeg project attempted to use eeg signals to drive changes to light and sound patterns presented to the user to attempt to change their eeg patterns further and created a sort of feedback loop between the person, their brainwaves, the computer, and the lights and sounds

This was an attempt to create a self reflective meditative therapeutic experience for our participants

Heart attacks, strokes, risk of heart attacks and strokes, adhd diagnosis, alzheimer's

is braingate the work of doubles hofler donahue dockwere
Darpa revolution laboratory?
Applied physics robotic arm

a0162z
(oscillat, field, array, observer, vector)
The famous double slit experiment, has been analyzed by many, reproduced many times, by independent teams. The particle has a wave pattern unless you observe which slot it went through. I think I know. I will explain in the book.

https://en.m.wikipedia.org/wiki/Double-slit_experiment

Its that the oscillator that represents the configuration of the observer has a strange configuration space that attracts particles and energy from other oscillators

a beam of light moving through space at the speed of light is equivalent in gravitational power to an oscillator

so basically the observation of a particle warps space between the observer and the particle, it warps the spacefield because time moves faster in the line between the oscillators the observer and the observed

this causes the potential wave pattern of one powerful oscillator to be replaced with a particle that represents accelerated space between two oscillators within range of each other

the consequence is that light has a gravitational effect

so we can joke that light is the gravitational particle, but its a joke because all particles are gravitational in physics.

I overheard some say that Flash was ahead of its time that it has mesh UDP for video streaming

I said what is that?

Imagine polygon mesh UDP! Each point, line, and triangle surface is send seperately as vectors over UDP with a neural network on the recieving end reconstructing the message. This is like that Nvidia ai video streaming speedy

okay so my great business idea

was that to use neural networks

the idea is to do an array swap with a variable GNULL when the user grabs an item from the array

when the user lets go it drops, a timer goes off, and the animation block that is GNULL initiates a retrieval and then is swapped out at which point it does nothing since its invisible

but if the user grabs another item while GNULL is active then

okay let's say no array swap happens

but just that after the items are done animating they are free to pull

a0163z

The inside cover of the back of the book
the joke that I make about reading a book about human consciousness is that everytime they get to describing the neurophysics of neurons and how that adds up to human consciousness

they sort hand wave away the problem with an answer like "well neurons do neuron stuff" or "they spike, send their spikes, and then convolutional neural networks and then magic stuff we don't know about yet happens" or "quantum physics is a mystery so that's how consciousness works" or "all the information is squished together, like synchonized, like an orchestra, symphony, or bits of a soul" or "neurons make melodies because your ear vibrates with melodies" "or the universe is all conscious" and all these hand wavy answers exist to prevent you from going further with your questioning. They are plugs for your mind to stop you from looking deeper. In this book I am going to try out a possible and novel explanation for how the neurophysics of consciousness creates itself producing you from what could otherwise be considered a bag of meat, salt, and water.

From quantum particles to global brain activity to your entire body, to spacetime itself I am going to share a plausible prediction for how human consciousness might work.

a0164z
the complexity of the dendritic branches in the pyramidal cell make it a more sensitive sensor/transmitter,consideration/action system
https://storage.googleapis.com/deepmind-media/A%20Generalist%20Agent/Generalist%20Agent.pdf

Safely Studying Dangerous Infections Just Got a Lot Easier
An extremely fast new 3D imaging method can show how cells respond to infection and to possible treatments
https://newscenter.lbl.gov/2022/02/25/safely-studying-infectedcells/?fbclid=IwAR2eRJ7_ZeWb0jSZ8P1hpXdEWrh2c5nffkVdIGO-IBvucxs114Roc-pMYRM

Sally Ali It is going to take your neurons a while to reach the threshold point to where they want to learn about neurons and threshold points to higher contextual fractal awareness.

we need a biomedical bot ecosystem
so that we have bots that watch other bots, and we have tcell bots that fix issues, and sort of patrol the bot ecosystem looking after the safety of systems and people

there is a simple reason why the universe is not all conscious all the time that you can intuit by thinking about how you are not all conscious all the time, but also.

a0165z
Note created Jun 5, 2012 ()

Volition. Who or what is really in charge of the ship? How could that be verified in direct experience?

Its as if the brain builds a map of everything it senses, including its own body, so your name is associated with an internal map, that is associated with a voice that is associated with motor

controls, that why when someone calls your name your body responds, so there is a map which is kind of like an avatar of self, the thoughts you have are effecting the actual hardware of your body all the time, and they are effected by everything else as well, but they are yours just because those a variables in your map and your brain is writing maps all the time.

Your neurons which fire thoughts are regulating every cell in the body, its a complex system, but the brain can change itself, meaning you can change you.

What's interesting is that this that the ability to regulate, control, grow, change and choose yourself, your actions, your development, and your relationships towards others does not actually eliminate the possibility that this is a deterministic universe, just because it's a probabilistic universe does not mean that it's not also a deterministic one, being that the universe on some scales appears to be probabilitic might mean that we will never be able to predict what is going to happen with certainty.

Apparently the thought of your existence is unified with the physiology of your brain. So you might be responsible for your actions towards others in a dualistic context, because the rules of determinism may include unpredictable probabilities, and self organizing beings that have to regulate their own behavior, something they call choice, in order to survive on this tough planet. It's very paradoxical.
4 minutes ago · Like

Micah Blumberg
Someone said there is a bell curve of probabilities, in the middle where the curve is thickest are the things you are most likely to do, and on the ends of the bell curve where it's thinnest are the things you are least likely to do, and what you do is called your choice, but it's someone of a dice roll, there is a probability your going to pick something in the middle, but there is the chance your going to choose something on the ends.

Leland Small
"If you are the sum of your experiences and those past experiences shape your present view of what is happening and your immediate actions are in response to the story line you have created around those past experiences, then is anything in your present mind based on volition or is your action more reaction to associative stimulation? In other words, everything you have ever done has brought you to this post; and reading it, your reaction to it is based on the sum of those experiences. I would think your first action is the only independent action you have ever taken or maybe not."

Micah Blumberg
No in your scenario there are no independent actions, not even the first action.
15 minutes ago · Like

Micah Blumberg

That's the kind of determinism where every action we take is preceded by something that came prior, as if we are only part of the chain of cause and effect

so the other idea, is to consider a world that is a probability, and the mind is a betting machine, and a choice in that context is a dice roll, and you don't know what your choice is going to be (it's a dice roll) but you can predict it sometimes, because your more likely to choose somethings over other things

I am not saying that you control your choice, it might be an automatic reaction, but you, and choices, are part of the map of reality that your brain uses to coordinate, to increase the chances of a successful result, because it has evolved to increase the chances of a successful result, by doing all sorts of amazing things, like considering it's own choices, sure it might be deterministic probability on another level, but that doesn't mean it's not useful.

If someone stopped making effort because they believed their thoughts did nothing, well that would be a quiet way out of existence for some. Maybe they had no choice because of fate. I've got the brain plasticity info encoded in my brain tissue that says, hey wait a second, we are not fixed in terms of our present expectations, maybe you can't predict your future path, and when you can't predict your future path, maybe you will start to go wild with trying to predict all the fun things you could do that you never before thought you would do, then the odds of rolling the dice of choice on one of those new things increases a lot!

////////////////////////////////////// Complete text below.
Rob Unknowing
Volition. Who or what is really in charge of the ship? How could that be verified in direct experience?

Micah Blumberg
Rob, please check out this book by Norman Doidge, MD | The Brain That Changes Itself
http://www.youtube.com/watch?v=8Z1nLJNqpLk
This answers your question

Chelsea Reede
For me it is an unanswerable question with the language skills I have. No words are adequate.

Micah Blumberg
It is answerable, it has been answered before, articulately, by hundreds of people.

Rob Unknowing
Well on the whole it seems pretty obvious that Rob isn't the one in control. I usually say something like Life is what determins outcomes. Maybe life operates through Rob. Lately I've realized there is still a subtle assumption that these are my thoughts. How could they be mine? Micah I am not reading another damn book :) Sounds like torture.

Micah Blumberg
Its as if the brain builds a map of everything it senses, including its own body, so your name is associated with an internal map, that is associated with a voice that is associated with motor controls, that why when someone calls your name your body responds, so there is a map which is kind of like an avatar of self, the thoughts you have are effecting the actual hardware of your body all the time, and they are effected by everything else as well, but they are yours just because those a variables in your map and your brain is writing maps all the time.
your neurons which fire thoughts are regulating every cell in the body, its a complex system, but the brain can change itself, meaning you can change you.
this book I mentioned is not torture, its paradise, its heaven, your brain will love you for reading it
but there are videos you could watch if your against reading

Rob Unknowing
Haha jeeze maybe I will look up a video some time.
So no one is going to say that they are individually responsible for how they treat others? this is my poor attempt at baiting.

Micah Blumberg
What's interesting to me Rob, is that this that the ability to regulate, control, grow, change and choose yourself, your actions, your development, and your relationships towards others does not actually eliminate the possibility that this is a deterministic universe, just because it's a probabilistic universe does not mean that it's not also a deterministic one, it might mean that we will never be able to predict what happens. Apparently the thought of your existence is unified with the physiology of your brain. So you might be responsible for your actions towards others in a dualistic context, because the rules of determinism may include unpredictable probabilities, and self organizing beings that have to regulate their own behavior, something they call choice, in order to survive on this tough planet. It's very paradoxical.

Someone said there is a bell curve of probabilities, in the middle where the curve is thickest are the things you are most likely to do, and on the ends of the bell curve where it's thinnest are the things you are least likely to do, and what you do is called your choice, but it's someone of a dice roll, there is a probability your going to pick something in the middle, but there is the chance your going to choose something on the ends.

Babu Shunti
...and ultimately no one can be your authority on any such matter, not the you that the you is still caught in, or is still doing its thing to be part of society to a degree. If anything I"d call it an intelligence.

Leland Small
If you are the sum of your experiences and those past experiences shape your present view of what is happening and your immediate actions are in response to the story line you have

created around those past experiences, then is anything in your present mind based on volition or is your action more reaction to associative stimulation?

In other words, everything you have ever done has brought you to this post; and reading it, your reaction to it is based on the sum of those experiences.

I would think your first action is the only independent action you have ever taken or maybe not.

Micah Blumberg
No in your scenario there are no independent actions, not even the first action.
That's the kind of determinism where every action we take is preceded by something that came prior, as if we are only part of the chain of cause and effect
so the other idea, is to consider a world that is a probability, and the mind is a betting machine, and a choice in that context is a dice roll, and you don't know what your choice is going to be (it's a dice roll) but you can predict it sometimes, because your more likely to choose somethings over other things
I am not saying that you control your choice, it might be an automatic reaction, but you, and choices, are part of the map of reality that your brain uses to coordinate, to increase the chances of a successful result, because it has evolved to increase the chances of a successful result, by doing all sorts of amazing things, like considering it's own choices, sure it might be deterministic probability on another level, but that doesn't mean it's not useful.
If someone stopped making effort because they believed their thoughts did nothing, well that would be a quiet way out of existence for some. Maybe they had no choice because of fate. I've got the brain plasticity info encoded in my brain tissue that says, hey wait a second, we are not fixed in terms of our present expectations, maybe you can't predict your future path, and when you can't predict your future path, maybe you will start to go wild with trying to predict all the fun things you could do that you never before thought you would do, then the odds of rolling the dice of choice on one of those new things increases a lot!

Maybe we all have no real choice, and at the same time, choice as in the probability that must be decided, regarding what we do next, is part of the map of reality. The organism must choose, the program is shaped by evolution in some sense is it not? So when we talk about choice, maybe it means something different then we think, maybe it means something neurological. Some people may feel like they have less choice, or less self control, or less ability to do things they want to do because of a situation regarding other people, or a situation regarding an diagnosis learning disability, or because of an illness.

You can change your life, because brains can change themselves, because neurons are the kind of cells that can regulate other cells, in addition to fire together to produce thought, expectation, beliefs, predictions, the illusion of a unified awareness, that is really a coordinated symphony of many separate players playing together. (Neurons are the instruments)

So what does it mean when we talk about choice, if determinism is reality? Perhaps these thoughts describe something that is not psychological in nature, but neurological. Maybe it's an upset brain chemistry, or a brain tumor, or a minor series of strokes, or just bad training.

Neurons that fire together wire together
Neurons that fire apart wire apart
Neurons that are out of sync do not link

so with different kinds of training, or new sensory apparatus, or new brain stimulation, or new diet for healthy brain chemistry it's possible that someone's dialog may shift from feeling like determinism is high on their mind, they might be stressed, fatalistic, with a worsening personal situation, about to be homeless.

then with that new training, new artifical sense machine, new brain stimulation, improved brain chemistry, it's possible that they will start sounding very happy about the word choice

it might indicate that their brain is functioning very well, I mean how a person views choice might indicate their assessment of their own personal ability to coordinate their body and mind.

Choice is a measure of our satisfaction with our ability to coordinate ourselves in alignment with our expectations, but in a sense we can talk about choice this way, in the context of a probability based cosmos, or a indeterministic probability cosmos.

a0166z
Sep 13, 2013
(hebb, oscillat, causation, dendrite, synap)

I think 'you' is a directional concept, a direction that is always moving but somehow always points at you, where is you? do you have a centerpointe? is there any real you inside you or just a direction? How can you ever be separate from your brain and what your brain does?

Asking about whether the brain makes a decision before you do is a metaphysical disaster, it's an absurdity of terms, how does a brain become separate from you it doesn't even hold up to scrutiny, yet what number of persons will actually scrutinize this quandary?

The idea of freewill for the individual isn't about what the individual is doing this millisecond, it's about how the individual brain will interpret information by it's own criteria and adjust it's movements correspondingly.

Every few milliseconds billions of pre-synaptic neurotransmitters are flooding across a gap into a post synapse adjusting the firing criteria for the post-synaptic dendrite. This is the mechanics of criteria causation or information based change. The information that makes up thought is causing biological movement, voice movement, finger typing movement, and even further thought movement.

There is a cycling vortex, and attractor of brainwave activity that is flowing, swooshing, oscillating with symphonic vibrancy to synchronize new hebbian learning patterns into the ongoing synergy of neural activity that is the canvas of sensory space and the magical direction called you.

a0167z
(field, graph) self aware graph network
A self aware network is a different kind of graph neural network, it uses its electrochemical graph to create a phase or frequency graph, that is our graphical rendering of reality, a computational simulation like the movie the matrix, rendered for our VR sized field of view, in one interval of time that is relevant to our movement speed.

a0168z ctpr
(cortex, amplitude)
organization
This has many micro cycles from the main cycle, and the microcycles are divided by mesocycles meso cycles, so there are two scales of patterns for the macro cycles. Or maybe the scale of the pattern is more like the alpha band of the delta band,

right like maybe the slow frequency but higher amplitude delta is better at binding high level patterns at the top of the cortex that need to move slower in part because

a0169z ctpr
(oscillat, field, array) Oscillating Phase Fields of Awareness
Lets create a quiz to find out if you are a robot. We will build it with WebXR. We need to ask you some questions. First of all lets talk about your eyes, do your eyes contain a robotic sensory array called a retina that oscillates and sends signals to other groups of oscillators that oscillate thanks to the movements of metals inside and outside lipid sacks which separate into charges that propel sacks of chemicals to hit other oscillators causing them to displace their charges faster or slower resulting in oscillating phase fields of awareness that track fast & slow changes to the phase field and learn patterns from it overtime, eventually resulting in the comprehension of reality.

Do your ears contain a sensory array, from hairs sensors that vibrate with the influx of sound patterns, or mechanical vibrations challenged to a small scale by your ear drum.

Does your skin contain sensor-arrays called mechanoreceptors? Do all of the signals from all of your sensory arrays arrive at your brain at at somepoint interact with your

a0170z (oscillat) Splay States or Anti-Phase
https://www.researchgate.net/publication/220403160_Splay_States_in_a_Ring_of_Coupled_Oscillators_From_Local_to_Global_Coupling

(perception, field) Magnetism in the human brain.
"Distribution of magnetic remanence carriers in the human brain"
https://www.nature.com/articles/s41598-018-29766-z

"We know that birds can only sense magnetic fields if certain wavelengths of light are available - specifically, studies have shown that avian magnetoreception seems dependent on blue light."

"This seems to confirm that the mechanism is a visual one, based in the cryptochromes, which may be able to detect the fields because of quantum coherence."

"The fancy eye protein is called Cry4, and it's part of a class of proteins called cryptochromes - photoreceptors sensitive to blue light, found in both plants and animals. These proteins play a role in regulating circadian rhythms."
https://www.sciencealert.com/birds-see-magnetic-fields-cryptochrome-cry4-photoreceptor-2018?fbclid=IwAR2JLwSy4eWti_g8fct_TRTtb2RUifDSZgskcWXcRVCiivtxV0HmfL1_P4w

The exact degree to which the brains neural firing is affected by electromagnetic waves is unclear, but showing that the firing of neurons actually is affected by magnetic field waves implies that human beings can become aware of magnetic fields. Infact the same proteins that allow birds to detect magnetic fields (to fly north or south seasonally as birds do) may also allow human beings to detect magnetic fields. So why is it that not everyone we talk to seems to be perceiving electromagnetic waves? I do think it is in part because of the Perception-Action Cycle is a requirement for any organism to become conscious of a pattern. I would expect that people who pay a lot of attention to the sky, the way birds do, people in occupations such as Air Traffic Controllers, that these people would be more likely to develop a sense of the earth's magnetic field. Out of any group of people, I would expect sky watchers to be the first people to learn to see/perceive large scale electromagnetic fields.

a0171z ctpr
(oscillat, field, array, qualia, tomography, dendrite, decoherence)

Self-Aware Networks use Neural Array-Projection Tomography:

Multi-layer phase field pattern representation (in brain wave oscillations), tomography with synapses & dendrites that detect coincident patterns of learned criteria (criterial causation Peter Tse), and phase changes transmitted out to the network via the exit terminal branches.

Imagine the 4dimensional phase space as like a watercolor painting with layers of paint, or similarly an oil painting also with layers of paint, but imagine that this is a 3D painting that encode position, orientation & velocity of memories (represented by phase transitions), renders live action in pieces with different parts of the brain constructing different parts of your reality at different moments, from the layers sprouting from exit-terminal activities to create decoherence patterns in an oscillating group of neurons, the decoherence pattern of inhibitions & excitations is containing in its phase changes the representations of what we see, hear, taste, feel etc, ie

our qualia are patterns in the phase changes of the brains electromagnetic phase field, and the dendrites inside arrays or grids of neural networks read these phase changes which are our predictions driving our muscle movements, our words, and our actions, and ourselves to help us navigate life, and respond to novel incidences. Humans are response able system, and in a sense the liability of a human being is similar to the liability that a self-driving vehicle with a self-aware network will be required to have

a0172z
(category, theory, field,, tomography, vector, fourier) Fourier Neural Operator for Parametric Partial Differential Equations

Introducting the Fourier Neural Operator: They made neural networks more efficient at solving partial differential equations. It learns to map function spaces the result is a neural network that is more finely grained in its learning resolution compared to mapping vector spaces (the x, y, and z)
link0 https://twitter.com/techreview/status/1454310037594193926?s=20
link 1 https://arxiv.org/pdf/2010.08895.pdf
link 2
https://www.technologyreview.com/2020/10/30/1011435/ai-fourier-neural-network-cracks-navier-stokes-and-partial-differential-equations/?utm_medium=tr_social&utm_campaign=site_visitor.unpaid.engagement&utm_source=Twitter
"AI has cracked a key mathematical puzzle for understanding our world"

The human brains 3D tempo-spatial phase-field learning neural network is likely also learning resolution invariant & scale invariant patterns, that map not just topological vector spaces but also map functions.

When I think about mapping functions I also think of category theory, A -> B is a map of how A transforms into B, the function is the isomorphic operation between A and B that transforms one into the other.

What a fourier neural operator can help solve is in transforming the function or the arrow between the transforms into a sparse representation, a neural network can find the sparsest representation that is the isomorphic function equivalent of what was observed.

Function mapping with Neural Tomography

a0173z
A logical argument to make is that our minds only have a partial representation of other people, never the whole picture because we can see every thought that another person has, or everythought they would eventually have if they lived long enough. So from a matter of perspective in each new interval of time my understanding of the people I know being replaced with a new understanding this gives me the opportunity to see that they were more

a0174z
The metaverse 2.0 (metaverse)

1.0 Avatars & Personal Items with ExokitWeb
2.0 Snow Crash
3.0 Nexus
4.0 Sword Art Online
5.0 The Matrix
6.0 Everyone merges with the computer that is spacetime.
7.0 The universe reboots humanity

a0175z
(causation) response-able
In my reading of how the brain works, humans are response-able bodies of causation. We react at macro, micro, and meso scales to patterns at all scales including quantum scales and astronomical scales.

I think we are each reactive & response-able or able to respond to anything in any way that occurs to us. I respond to choices that are presented to me for example. For this reason I wish that everyone in the world can understand that we are all reactive, and that we should all imagine how good it can feel to not only forgive ourselves but also to forgive everyone else. Imagine how happy we could all be if everyone was able to forgive everyone else. Now imagine that you can do it alone in your mind, and you can know that some others out there are doing it also just like you. Just forgiving everyone who ever lived (including themselves) because we are all each reactive & response-able humans.

a0176z
Note created Mar 29, 2019
This includes notes on Numenta's work.
(cortex) cortical structure

The estimate is that there are over 100 regions that your neocortex is divided into.

Different types of connections

Dozens of different types of neurons, different response properties, different connectivity properties, different gene expression

Roughly organized into layers

Most connections in the neo cortex are across the layers

few connections horizontally

all regions in the neo cortex have a motor output, people knew this only 20 years ago

everywhere you look there are cells in layer 5 that project some place into the rest of the body and create movement

every sense in the brain is a sensory motor issue

there is no sense that isn't connected to a motor function somewhere in the body.

Vernon Mountcastle's Big Idea

1. All areas of the neocortex look the same because they perform the same instrinsic function

2. What makes one region visual and another auditory is what it is connected to.

3. A cortical column (1mm squared) is the unit of replication

from Mountcastle, 1978

What makes a vision area vision, what makes an audio area hearing, and what makes a somatosensory area touch is what you connect it to.

A cortical column which is just a little bit under a square millimeter contains all the essential circuitry that you will see everywhere

A cortical column is the unit of replication

If you can understand what a cortical column does then you understand the whole thing

In a human being we have 150,000 cortical columns (in the neo cortex)

150,000 columns of the same basic circuitry

Every column must perform the exact same functions that the entire neo cortex does, there is no other place for things to happen

If prediction happens in the brain it has to occur in every column, if am going to learn sequences and be able to play back sequences, every column has to be able to do this

every part of your skin is going to predict what it's going to sense,

"A Theory of how Columns in the Neocortex enable learning the structure of the world"

A compositional object is two previously separate objects that are now joined together such as a sticker and a coffee cup

A recursive structure, I could have a logo with a coffee cup and the coffee cup could have a logo with a coffee cup, and that coffee cup could have a logo with a coffee cup, recursive structure is essential for luggage

a0177z

(LTD, oscillat, synap)

My model of a neuron

Connect notes a0177z, a0286z, a0039z

I believe that the correct model of a neuron understands that the four levels of conductivity in the synapse represent a threshold mechanism like the APsyn that could be combined with the growth or atrophy of other receptors to increase a cells sensitivity to certain patterns, a pattern detection mechanism with varying levels of sensitivity, the dendrite, soma, represents additional levels of sensor sensitivity to phase timing patterns represented as synaptic connections

In addition we need to combine the Soliton model of neural firing (because dendrites & the soma expand & contract before during and after action potentials) with the Hodgkin & Huxley model which is just incomplete, the resulting combination of both is a multi-modal sensor-transmitter neuron with multiple levels of sensitivity,

finally the magnitude of the APsyn is more relevant than the Amplitude, because the duration replaces the Amplitude in the changed waveform of the APsyn, set by mostly changes in potassium, affects how long the calcium channels are open/closed resulting in the number of vesicles containing neurotransmitters that released, with 0, 1, 2, or 3 vesicle sacks capable of being released, each might contain 2000 neurotransmitters,

Soliton + Hodgkin & Huxley Model

Combine Hodgkin & Huxley model with the Soliton Model of neural firing and you get a sensor with memory, the mechano waves correlate with short term memory building as ionic charge build up, and memory is defined by the number of synapses in each type, and the configuration specifics of each synapse including its firing threshold, inhibition status, or mere existence. The process of LTD might remove synapses, LTP creates new synapses and new spines.

The neuron passes a phase change as wave that maintains its shape with duration & frequency properties, but its energy dissipates over time and or distance. So it maintains its information like a soliton wave, but it dissipates its energy over time and space like the Hodgkin & Huxley model might imply.

The human mind has sensorys with memory that are also transmitters in every cell, its neuron glial networks are configured to learn invariant tempo-spacial-scalable-patterns, magnify them, error correct them with redundancy voting accomplish by oscillatory convergence, power band convergence (alpha, delta), and dipole convergence for thalamic scale observation of global scale cortical patterns that have been magnified from the meso and neuronal scale

A comparision of Hodgkin-Huxley and soliton neural theories
R. Appali, S. Petersen, and U. van Rienen
Institute of General Electrical Engineering, Chair of Electromagnetic Field Theory, University of Rostock,
Justus-von-Liebig-Weg 2, 18059 Rostock, Germany
https://ars.copernicus.org/articles/8/75/2010/ars-8-75-2010.pdf

//
A perspective in the brain is a structure in 4D space that renders interval of 4D space.

Patterns scale both spatially and temporally

Its a phase space in a feedback loop.

a0178z ctpr
(graph)
path of signals
Do signals find their own path,

or does the brain define the path of signals?

Is it like the path that the signal takes in the brain is something that contains the information of the signal as a sonic imprint, like a photograph,
or is the brain sorting signals, by their differences algorthmically, using brain space as a sort of digital hard drive space, so representations are in bits like numbers, bits in terms of coincidence patterns representing a long sparse of spatially & sequentially distributed numbers, string during playback of a neural circuit

How smart are Alpaca's? How similar are they to people? Do they have a language?

////////////////////////////////////

Neo Mind Cycle: brainwave entrainment reference
"Boosting Memory Performance by Finding Amplitude of Brain Waves and Speeding Oscillations"
https://neurosciencenews.com/entrainment-memory-19708/amp/

////////////////////////////////

(oscillat, decoherence, synap) oscillation
Imagining that the neurons couple via the principles of oscillation, firing at the same time causes them to absorb each others timing, I think of the brain's oscillations as being clock like, even if one oscillation is permanently decoherent from another oscillation it is possible for their clocks to interact like gears, such that they will maintain their decoherence, but perhaps they will also share moments of coherence, such when firing does occassionally align (coherently) once in a long time before decoherence again. While writing this I am imagining two solar systems or two galaxies close enough to be affected by each other's gravitational pull, but not close enough to rip each other apart, and not close enough to merge. Another possibility could be that oscillatory alignment between two neurons that fired together is not just strengthened at the synaptic level, with synapses appearing and growing stronger to support connections inbetween those neurons, and synapses growing inbetween all the neurons inbetween those neurons.

a0179z ctpr
(synap, dendrite, cereb, cortex) #3 #dendrite
Brain Neuroscience
dendrites anatomy and function

https://bigthink.com/mind-brain/human-neuron-signals

the following is text copied from the article, quoted

Quote begins:
"unique brain signal may be the key to human intelligence
Scientists exploring human neurons directly learn some remarkable things.
ROBBY BERMAN
10 January, 2020
A unique brain signal may be the key to human intelligence
Image source: vitstudio/Shutterstock

Most research regarding human brains is performed with rodent brains on the assumption that it may also apply to us.
An unusual study looked at recently resected human brain tissue that turned out to contain some big surprises.
Human neurons' unexpected electrical signals and their behavior shed new light on human intelligence.
Though progress is being made, our brains remain organs of many mysteries. Among these are the exact workings of neurons, with some 86 billion of them in the human brain. Neurons are interconnected in complicated, labyrinthine networks across which they exchange information in the form of electrical signals. We know that signals exit an individual neuron through a fiber

called an axon, and also that signals are received by each neuron through input fibers called dendrites.

Understanding the electrical capabilities of dendrites in particular — which, after all, may be receiving signals from countless other neurons at any given moment — is fundamental to deciphering neurons' communication. It may surprise you to learn, though, that much of everything we assume about human neurons is based on observations made of rodent dendrites — there's just not a lot of fresh, still-functional human brain tissue available for thorough examination.

For a new study published January 3 in the journal Science, however, scientists got a rare chance to explore some neurons from the outer layer of human brains, and they discovered startling dendrite behaviors that may be unique to humans, and may even help explain how our billions of neurons process the massive amount of information they exchange.

A puzzle, solved?

Image source: gritsalak karalak/Shutterstock

Electrical signals weaken with distance, and that poses a riddle to those seeking to understand the human brain: Human dendrites are known to be about twice as long as rodent dendrites, which means that a signal traversing a human dendrite could be much weaker arriving at its destination than one traveling a rodent's much shorter dendrite. Says paper co-author biologist Matthew Larkum of Humboldt University in Berlin speaking to LiveScience, "If there was no change in the electrical properties between rodents and people, then that would mean that, in the humans, the same synaptic inputs would be quite a bit less powerful." Chalk up another strike against the value of animal-based human research. The only way this would not be true is if the signals being exchanged in our brains are not the same as those in a rodent. This is exactly what the study's authors found.

The researchers worked with brain tissue sliced for therapeutic reasons from the brains of tumor and epilepsy patients. Neurons were resected from the disproportionately thick layers 2 and 3 of the cerebral cortex, a feature special to humans. In these layers reside incredibly dense neuronal networks.

Without blood-borne oxygen, though, such cells only last only for about two days, so Larkum's lab had no choice but to work around the clock during that period to get the most information from the samples. "You get the tissue very infrequently, so you've just got to work with what's in front of you," says Larkum. The team made holes in dendrites into which they could insert glass pipettes. Through these, they sent ions to stimulate the dendrites, allowing the scientists to observe their electrical behavior.

In rodents, two type of electrical spikes have been observed in dendrites: a short, one-millisecond spike with the introduction of sodium, and spikes that last 50- to 100-times longer in response to calcium.

In the human dendrites, one type of behavior was observed: super-short spikes occurring in rapid succession, one after the other. This suggests to the researchers that human neurons are "distinctly more excitable " than rodent neurons, allowing them to successfully traverse our longer dendrites.

In addition, the human neuronal spikes — though they behaved somewhat like rodent spikes prompted by the introduction of sodium — were found to be generated by calcium, essentially the opposite of rodents.

An even bigger surprise

Image source: bluebay/Shutterstock

The study also reports a second major finding. Looking to better understand how the brain utilizes these spikes, the team programmed computer models based on their findings. (The brains slices they'd examined could not, of course, be put back together and switched on somehow.)

The scientists constructed virtual neuronal networks, each of whose neurons could could be stimulated at thousands of points along its dendrites, to see how each handled so many input signals. Previous, non-human, research has suggested that neurons add these inputs together, holding onto them until the number of excitatory input signals exceeds the number of inhibitory signals, at which point the neuron fires the sum of them from its axon out into the network.

However, this isn't what Larkum's team observed in their model. Neurons' output was inverse to their inputs: The more excitatory signals they received, the less likely they were to fire off. Each had a seeming "sweet spot" when it came to input strength.

What the researchers believe is going on is that dendrites and neurons may be smarter than previously suspected, processing input information as it arrives. Mayank Mehta of UC Los Angeles, who's not involved in the research, tells LiveScience, "It doesn't look that the cell is just adding things up — it's also throwing things away." This could mean each neuron is assessing the value of each signal to the network and discarding "noise." It may also be that different neurons are optimized for different signals and thus tasks.

Much in the way that octopuses distribute decision-making across a decentralized nervous system, the implication of the new research is that, at least in humans, it's not just the neuronal network that's smart, it's all of the individual neurons it contains. This would constitute exactly

the kind of computational super-charging one would hope to find somewhere in the amazing human brain.

"

a0180z
(oscillat, perception)
Action to Perception
is an arguement for
embodied cognition
could be essential for creating self-aware perception

arguing that conscious awareness depends on action, introspection, the journey of the ego to consider different scenarios

but the point is that self-awareness might build itself by exploring itself in a literal series of action steps.

then for waking self consciousness a further step is a perceptual cycle or a four dimensional summary of all perspectives. (temporal oscillations uniting the data from cortical columns into a movie)

self aware means a self aware network has concept or a model of itself at least as a directional concept and/or as an implied body of causation. It also senses itself as this implied body of causation & its ecosystem as something distinct from its body.

a0181z
Feynman :: Rules of Chess
transcription by metamerist
https://metamerist.blogspot.com/2011/10/feynman-rules-of-chess.html

The late great genius explains the process of rational inquiry via chess analogy.

"One way that's kind of a fun analogy to try to get some idea of what we're doing here to try to understand nature is to imagine that the gods are playing some great game like chess. Let's say a chess game. And you don't know the rules of the game, but you're allowed to look at the board from time to time, in a little corner, perhaps. And from these observations, you try to figure out what the rules are of the game, what [are] the rules of the pieces moving.

You might discover after a bit, for example, that when there's only one bishop around on the board, that the bishop maintains its color. Later on you might discover the law for the bishop is that it moves on a diagonal, which would explain the law that you understood before, that it maintains its color. And that would be analogous we discover one law and later find a deeper understanding of it.

Ah, then things can happen--everything's going good, you've got all the laws, it looks very good--and then all of a sudden some strange phenomenon occurs in some corner, so you begin to investigate that, to look for it. It's castling--something you didn't expect.

We're always, by the way, in a fundamental physics, always trying to investigate those things in which we don't understand the conclusions. We're not trying to all the time check our conclusions; after we've checked them enough, they're okay. The thing that doesn't fit is the thing that's most interesting--the part that doesn't go according to what you'd expect.

Also we can have revolutions in physics. After you've noticed that the bishops maintain their color and that they go along on the diagonals and so on, for such a long time, and everybody knows that that's true; then you suddenly discover one day in some chess game that the bishop doesn't maintain its color, it changes its color. Only later do you discover the new possibility that the bishop is captured and that a pawn went all the way down to the queen's end to produce a new bishop. That could happen, but you didn't know it.

And so it's very analogous to the way our laws are. They sometimes look positive, they keep on working, and all of a sudden, some little gimmick shows that they're wrong--and then we have to investigate the conditions under which this bishop changed color... happened... and so on... And gradually we learn the new rule that explains it more deeply.

Unlike the chess game, though... In the case of the chess game, the rules become more complicated as you go along, but in the physics when you discover new things, it becomes more simple. It appears on the whole to be more complicated, because we learn about a greater experience; that is, we learn about more particles and new things, and so the laws look complicated again. But if you realize that all of the time, what's kind of wonderful is that as we expand our experience into wilder and wilder regions of experience, every once in a while we have these integration in which everything is pulled together in a unification, which it turns out to be simpler than it looked before."

a0182z
State Dependent Coupling of Hippocampal Oscillations
https://twitter.com/brijeshmodi12/status/1522109690989195264?s=20&t=cKCoOVcjhDpuR0OImXt3Jw
https://www.biorxiv.org/content/10.1101/2022.05.03.490415v1

a0183z
(thalamus, oscillat) an analogy that was perfect for your mind may have no meaning to the next person

It is the perfect phrase to connect and inter relate two unstructured stacks of data captures in the human brain, for your precise data structures I mean. To someone else the phrase that sounds like a key insight will sound like something else.

triangle

the thing is that if an electron has intrinsic spin then it has intrinsic energy, and the cosmos can't have a beginning,

because as a harmonic oscillator the cosmos can never stop or start

a cosmos that starts or stops

the odds of a harmonic oscillating cosmos reaching perfect equilibrium are about once in infinity

so

This morning I had another radical insight into neural function that has to do with learning, particularly with how neurons change their settings to have preferences for certain kinds of data. Sounds cool right? It's going into the book this morning :))))

Folks have heard the idea that the universe is a fractal and a hologram, but an electron is not a planet, unlike a planet an electron cannot lose its spin, and a hologram does not have mass. So these ideas break down on close inspection, but do they point to another idea?

The electron is spin
If spin is intrinsic to particles its because they are spin

A particle is intrinsic spin

"(A monk asked Master Zhao Zhou, "Does a dog have Buddha Nature?" Zhao Zhou replied, "Yes.")" Long before special relativity & neuroscience ancient Buddhist philosophers pondered the nature of the dog. Today scientists ask whether or a not an insect has subjective self-awareness.

The sign of internal self-awareness is the modulation of signals (such as in the thalamus) in that there is no contemplation or observation without modulation

a0184z
Note from Aug 17, 2012
(perception, cortex)

Andreea Hempure
Thought of the day: if Einstein said that space creates time, and we are space within space then we create time in time?
Unlike · · Unfollow Post · Wednesday at 3:14am near Haringey, United Kingdom
You, Dhanesh Solanki and 2 others like this.

Brian Bauereis
Do you think that the space we take up within the space that Einstein is describing, are any different? Your thought reminds me of an incredibly interesting fact: our brains are actually able to slow down time during moments when we need the most time available! Individuals perception of slowing down of time, in moments of crisis, is not a perception at all. Maybe your thought of the day just became more interesting. I invite you to look up this wondeful and mind blowing fact. :-)
Wednesday at 11:10am via mobile · Unlike · 2

Micah Blumberg
Spacetime is one thing, space doesn't create time, it is time, time is the fourth dimension of space.
Wednesday at 11:25am · Like · 1

Micah Blumberg
Humans are not separate from spacetime. lol I am spacetime
Wednesday at 11:26am · Like

Andreea Hempure
Micah space-time are interdependent therefore one creates the possibility for the other to happen!
Wednesday at 11:32am via mobile · Unlike · 1

Andreea Hempure
@brian, I'll have a thought about that when I finish work tonight.
Wednesday at 11:36am via mobile · Like

Micah Blumberg
If you watch starting at the 44 minute mark he talks about a new theory of how the brain does time. There is no clock inside, different regions of the neocortex experience time at faster or slower rates. The lower regions like V1 will experience time very fast while higher regions will experience time much more slowly.
http://www.youtube.com/watch?v=48r-IeYOvG4&feature=youtube_gdata_player

Jeff Hawkins - Hierarchical Temporal Memory
www.youtube.com
How a Theory of the Neocortex May Lead to Truly Intelligent Machines Jeff Hawkin...
See More
Wednesday at 12:05pm · Unlike · 2 ·

Micah Blumberg
it's really "spacetime", meaning its not two things :)
Wednesday at 12:07pm · Like · 1

Micah Blumberg
it seems like if adrenaline shifted your conscious peak brainwave activity into the lower regions your sense of time would slow down
Wednesday at 12:09pm · Like

Micah Blumberg
fyi My Grandfather led the team that created gps and put the first gps satellite in space http://en.wikipedia.org/wiki/Bernard_P._Randolph from him I learned that time on a satellite moves at a different (slower) rate than it does on earths surface where the curvature of space (related to the density of mass) is greater. It seems unlikely that a human brain is going to slow spacetime without reducing the entire planets density of mass. Gravity and Time are the same thing you see.

Bernard P. Randolph - Wikipedia, the free encyclopedia
en.wikipedia.org
Bernard Peter Randolph (born July 10, 1933)[1] is a retired United States Air Fo...
See More
Wednesday at 12:18pm · Edited · Like · 1 ·

Micah Blumberg
oh and this
http://blogs.discovermagazine.com/notrocketscience/2010/05/03/time-doesn’t-actually-slow-down-in-a-crisis/

Time doesn’t actually slow down in a crisis | Not Exactly Rocket Science | Discover Magazine
blogs.discovermagazine.com
Neuroscience and psychology | I'm on holiday this week so I'll be reposting a fe...
See More
Wednesday at 12:26pm · Like · 1 ·

Richard Pomfret
I shall have to look up Brian's wonderful and mind blowing fact as time distortion is put down to perception and i'd be rather surprised if that wasn't the case.
Wednesday at 12:28pm · Like

Micah Blumberg
look at what I just posted! it really isn't the case lol Brian must be joking
Wednesday at 12:30pm · Like

Richard Pomfret
Exactly. I thought he might have been joking but you never know....i've met plenty of people who believe the brain/mind can basically do anything (old school superstitious/non-evidence based thinking).

Wednesday at 12:33pm · Like · 1

Brian Bauereis
Not joking, Micah & Richard. It has been proven. It'll take me some time to pull those articles. However, I will look at what you posted. I sure hope your links are going to take me to credible literature. Mine will...once I get to them.
Wednesday at 1:24pm via mobile · Unlike · 1

Brian Bauereis
I must say that I don't consider Discover Magazine as being a primary source of credible science.
Wednesday at 1:27pm via mobile · Unlike · 1

Micah Blumberg
David Eagleman is the source not discovery magazine
Wednesday at 1:29pm · Like · 1

Micah Blumberg :D
Wednesday at 1:29pm · Like

Micah Blumberg http://www.eagleman.com/
Wednesday at 1:30pm · Like

Brian Bauereis
Yeah, their experimental methods reported in Plos One did not directly test the question, therefore that report cannot definitively negate my statement.
Wednesday at 1:31pm via mobile · Unlike · 1

Micah Blumberg
more about Eagleman and his life long exploration of humans sense of time
http://www.newyorker.com/reporting/2011/04/25/110425fa_fact_bilger?currentPage=all

David Eagleman and Mysteries of the Brain
www.newyorker.com
Online version of the weekly magazine, with current articles, cartoons, blogs, a...
See More
Wednesday at 1:31pm · Like ·

Brian Bauereis
Thanks Micah, I will check out Eagleman's work.
Wednesday at 1:33pm via mobile · Unlike · 1

Alex Andrusca

Brian Bauereis, you have a point in your first comment. Once I had a semi crash with the motorcycle.. I slipped at about 80 km per hour in a turn because of an oil stain and during those few seconds I had time to turn and look what the driver from behind was doing, turn my head towards the front side again and see what's coming, steer and break with my boots and hands too, while I was slipping on the wet tarmac and felt like absolutely nothing was wrong and in the same time calculate my next moves. Actually I felt like I had time for a coffee too during those about 3 to 4 seconds. After this moment passed, I felt the adrenaline kicking in and started to shake, but I was ok. And this is not the only time when time distortions appeared. The question is how do we control this?
Wednesday at 2:55pm · Like

Micah Blumberg
I think like a scientist, not like a church cleric representing the imperial tyranny of state recognized science, so if I see scientific proof that the brain slows time itself, instead of it's own experience of time then I will switch beliefs. It doesn't matter to me if the source of the experiment came from an outsider working at the patent office whose name was Einstein and didn't happen to have any articles in Plos. :) Considering what I know about how physics works, including general relativity, it does seem more plausible to me that the brain is changing its own experience of time, not slowing down actual time.
Wednesday at 3:31pm · Like · 2

Micah Blumberg
However I would love to be proven wrong about that. It would challenge the laws of physics if the brain actually slowed down time. It would upend General Relativity
Wednesday at 3:33pm · Like

Micah Blumberg http://en.wikipedia.org/wiki/Time_dilation

Time dilation - Wikipedia, the free encyclopedia
en.wikipedia.org
In the theory of relativity, time dilation is an actual difference of elapsed ti...
See More
Wednesday at 3:47pm · Like ·

Micah Blumberg
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0001295 an article from Plos one

PLoS ONE: Does Time Really Slow Down during a Frightening Event?
www.plosone.org
PLoS ONE: an inclusive, peer-reviewed, open-access resource from the PUBLIC LIBR...
See More
Wednesday at 4:05pm · Like ·

Micah Blumberg
they say the sensation of slowed time is the result of a richer collection of memory
Wednesday at 4:06pm · Like

Micah Blumberg
this has links to lots more stuff you might respect
http://www.spring.org.uk/2011/06/10-ways-our-minds-warp-time.php

10 Ways Our Minds Warp Time — PsyBlog
www.spring.org.uk
How time perception is warped by life-threatening situations, eye movements, tiredness, hypnosis, age, the emotions and more…
Wednesday at 4:07pm · Like ·

Micah Blumberg
All of these links to real scientific studies are great, but the most profound to me is Hawkins explanation of how different regions of the mind have different experiences of time, and that the brain does not have a central uniting clock, its not even in sync with itself :) (see video posted above)
Wednesday at 4:10pm · Like

Tags:
cortex

a0185z
noted from May 1, 2015
(synap, graph, oscillat, dendrite, cortex) April 29 at 11:05pm · Like · 1

Micah Blumberg "The substrate is trivial and would very quickly be optimal." That statement can't be applied to organisms. The brain from one species isn't a trivial difference from the substrate (brain) of another species. The idea that there is some optimal threshold of intelligence beyond which there will nothing left to improve reminds me of the story of the Patent Clerk who said that all the inventions had been invented already, and that there was nothing new left to invent. I'm pretty sure that was before Nikola Tesla. You can't really believe that.
3 hrs · Like

Micah Blumberg Charles H. Duell was the Commissioner of US patent office in 1899. Mr. Deull's most famous attributed utterance is that "everything that can be invented has been invented."
3 hrs · Like

Karoliina Salminen Micah Blumberg On neuron level the difference between species is trivial. All species have neurons, synapses, axons and dendrites that function the same way. There may be different "neuron types" on different species with different firing patterns, but I would think the firing pattern is a property of neuron, not a class of neuron, when it comes to computation. And

these firing patterns could be possibly learned as well or evolved to be optimal rather than trying to find every hundeds of different variants and after that discovering that there are hundreds more and after that probally noticing there are thousands more and so on.

How brain is wired (synapses, axons and dendrites) is not part of the code. That is part of the data in a mfm system.
3 hrs · Like

Micah Blumberg "On neuron level the difference between species is trivial"

That's not true!
2 hrs · Like

Micah Blumberg There are studies where human brain cells have been planted into mouse brains and massive increases in learning performance have resulted.
2 hrs · Like

Micah Blumberg The glial-neural metabolism in humans is vastly superior to that in mice, and if you transplant it into a mouse it's thinking massively improves.
2 hrs · Like

Micah Blumberg Human glial cells alone can massively improve the performance of mouse neurons, optimizing the metabolism of their little brains.

The substrate, and the wiring massively effects the performance of the system, and the performance of the system is the code. A tempo-spatial code.
2 hrs · Like

Micah Blumberg A tiny improvement to the human brain might result in a massive leap forward in human intelligence.
2 hrs · Like

Micah Blumberg The oscillating frequencies in the human brain, that capture and convey temporal and spatial patterns might be relative to one another in an important sense, but if you engineered a 50x multiplier that sped up everything, but kept the performance of each component the same relative to every other component then it would be like the same person, with the same ideas, but 50x times faster. When you have a human brain, who's metabolism is 50 times faster, and whose thinking is 50 times faster, well that is going to allow them to change the game 50 times faster than they could before. When you have an artificial brain, that can operate 10,000 times faster, that's like ... relative to you, one second of your time, is ten thousand seconds to it. Given that your brains have about the same size.

It's not just neural metabolism that makes a difference. It's also the number of layers in the cortex. A human brain has six layers. A dolphin, whale, or elephant with a bigger than human

brain has only one layer. Yet there are huge cognitive differences between humans and these specific animals. The amount of layers in a neo cortex is not trivial. What happens you give an AI 12 layers? What happens when you stack 12 layers of AI Cortex on top of a human neo cortex? 18 layers! What about 1800 layers? You can build it, you think it won't make a difference? It will make a difference. What about a neo cortex with a million layers? It will make a huge difference!
2 hrs · Edited · Like

Micah Blumberg "When you have an artificial brain, that can operate 10,000 times faster, that's like ... relative to you, one second of your time, is ten thousand seconds to it."

That's a way to understand something that is massively more intelligent than you. Your experience of time, and it's experience of time. When it has a faster and bigger brain, a single day, will feel like a decade to it, but like a day to you.
2 hrs · Edited · Like

Micah Blumberg After you read my argument you can not possibly believe this "the substrate is not even critical"
2 hrs · Like

Micah Blumberg Just saw this http://www.seriouswonder.com/nick-bostroms-optimism.../

Nick Bostrom's Optimism That Superintelligent A.I. Will Share Our...
SERIOUSWONDER.COM
2 hrs · Like · Remove Preview

Karoliina Salminen Micah Blumberg Do you think the modeling of glial cells is necessary then?
2 hrs · Like

Micah Blumberg The evolved metabolic performance of the substrate of a human brain is an analogy for the capacity to engineer massive improvements in the speed and capacity of machine intelligence.
2 hrs · Edited · Like

Karoliina Salminen This is of course highly speculative as today's computer models are far cry from even modeling the basics right, and glial cells probably has not been in consideration even by many that work on AI.
2 hrs · Unlike · 1

Karoliina Salminen Many still use ANNs which do not even model synapses, dendrites or axons properly. And it obviously also misses all dendrite-dendrite connections and axon "patch cable" joints.
2 hrs · Unlike · 1

Karoliina Salminen Instead of modeling a articifical neuron on level that it minics the function of real one, many in other words, use rigid weight matrices which are biologically extremely unrealistic and based on 60 years old science amd not today's
2 hrs · Unlike · 1

Micah Blumberg RNN's are really useful for voice recognition, and better than human image recognition, especially when combined with modern day graphics cards like Nvidia Titan.

So I don't want to say artificial neural networks are all useless, because of course its not true.

Yet the idea of the spiking model, is that neurons communicate with spikes, and you see that idea all over neuroscience publications and all over computational neuroscience publications.

The idea that neurons communicate with spikes can't be true for the simple fact that a spike goes from one point on one neuron to another point on that very same neuron. The Action Potential spike doesn't actually travel between cells. So how can entire industries promote this idea when all you need to do to see that it's wrong is to look at even the most basic illustration of a neuron.

Somehow billions of human brains can't connect visual information with text based information? In 1960 people knew this much at least about a neuron. So why?
Micah Blumberg's photo.
1 hr · Edited · Like

Micah Blumberg A spike rate is a poor indicator, a small percentage, like 1 percent of brain activity. So a model based on spikes is like one percent of what it could be. hehe
1 hr · Like

Micah Blumberg We won't have to model neurons and glial cells in a machine to make it high performing, in my opinion, but we are modelling neurons and glial cells to learn what makes them high performing.
1 hr · Edited · Like

Micah Blumberg It's possible that future engineers will actually design next generation artificial brains with actual dna as the structure, and it might have actual organic metabolism.
1 hr · Like

Micah Blumberg Why design computers with silicon when we can design computers in dna?
1 hr · Like

Karoliina Salminen Neuroscience tells the accumulated spikes get converted to chemical transmission in synapse and the post synaptic neuron again converts that to spike. How this is not true? If you have better insight than the picture, please elaborate.
1 hr · Like

Micah Blumberg I already said it, and you skipped around it, the spike is 1 percent of the neurons activity. the communication happens in the synapse, but for all the communication that happens between synapses, the spike only happens 1 percent of the time, so a model based on spikes is 1 percent of what it could be
1 hr · Edited · Like

Micah Blumberg this is why the statement, that neurons communicate with the spike, is not only demonstratably wrong if you point to any illustration of an axon on a neuron, but it's also the wrong level of focus, because when we are talking about communication between cells, we need to actually focus on what happens between two or more cells, and that is the synapse, that's where the dimensionality of the networks ability to calculate is massively multiplied beyond spiking models, it still includes spiking, but spiking plays a smaller role in network activities

a0186z
Note from Aug 1, 2012
(brain, array, synap)
book
website: neo mind cycle: increasing the depth of your "recursive embedding"

To understand what Neo Mind Cycle is, you need to understand your brain
I want you to understand your brain, so my twelve week course, includes 24 Neo Mind Cycle sessions
lessons in ai, neurology, and cognitive science

Meat is an interesting good conductor of electrical signals,
brain is a better conductor, actually it's almost a battery

memory is like a charge

the storage format is movement

so all data is converted into movement

the more important a concept is, the more associations it makes with other concepts

this means that you will think about it more often

1,000,000,000
one concept may have 1 billion connections

if you have 84 billion cells

then your going to think about this concept 1 times every 84 minutes

that's a huge concept

the reason you think about it, is that everything in your brain is connected

so if you have any electrical pathway, traveling in any direction, eventually it's going to connect with one of the cells that are connected to the 1,000,000,000 cells that represent the once concept

but this concept is so big, that all 1,000,000,000 cells are going to fire several times together all at once to form the concept

So Neo Mind Cycle becomes the a flash bulb, making big concepts, but this has to happen several times for the big concept to take hold.

once the big concept is formed, by repeating coincidental firings

it becomes an array that can represent many concepts

and it can be represented by a smaller number of cells, even by a single cell eventually

that single cell is enough to remind the other cells of what to do, what coordinated pattern to follow.

so instead of a giant firing pattern, the firing pattern smoothes out,

spatial data is being converted into movement, the sequences of movement are recorded, from what was initially learned

the initial memory was spatial/temporal relationships, then sparse distributed representations, then individualized grandmother neurons complexified to

replace the large distributed representation, with a single neuron that simply connects to the defining edges of what use to be the large distributed representation

it's as if the 1,000,000,000 billion cells is a specific shape, like a sphere, or more simply a circle, a curve, with volume, dimension

so grandmother neuron's connections represent the same 1,000,000,000 billion cells, by reacting to the cells that represent the outline of that circle, the corner of that curve, the expansion motion of that volume, and the contraction motion of dimension, and it connects to those to represent the sphere, essentially factoring 1,000,000,000 billion cells into connections assigned to one neuron,

which involves a new protein, that physically redefines the connections this neuron seeks to grow, so even if connections are destroyed, they can be regrown, the connections do not store any long term memory, they create active memory

the stored long term memory is the whole protein structure of each neuron, including tiny changes to the exterior of microtubules because of what the camkii2 does everytime a synapse fires.

"recursive embedding is consciousness itself" no its memory, capacitive memory, mans brain reaches to the moon, has a monkey been to the moon?

there is no self inside any memory, no part of the brain contains me, the meat is a capacity, relay, concept generating battery, your not inside you, your not inside your brain, it's just a capacitor/battery/memory/concept making/ relay

you don't exist at all, your brain exists, the concept of you exists, the memory of you exists, but none of that is you.

It's okay to argue that since there is no you apart from that, that this stuff is you, the memory, the concept, the brain,

but for the same reason you can argue that the whole ecosystem in which you are connected is also you, the whole environment, earth, solar system, galaxy, cosmos

yes your brain has memories, and concepts, and it effects your life in a deep way

so does your heart

so do other brains and other hearts

so does the whole environment

efficiency

even if you have a neural network with 100 billion neurons, you still need a way for a single neuron, to represent the unique result of a 100 billion neurons, in a unique way

so you simply capture the top 10 percent which is going to be the peak of the impact in all the regions of brain, and then that single neuron connects only to those peaks, not the 90 percent of neurons involved in the initial firing pattern

its as if the bulk of the brain is used for stage 1 environment sensing, and long term memories are novel, important, and persistent peaks of brain activity converted into single cell memories by connections that represent the factoring of large concepts

so its like if everything I am seeing is a number, a branching sequence of numbers, I'm only remembering the peaks of those numbers

actually this means my eeg numbers should represent my emotional present stage one sensory state

which I will be able to coordinate more efficiently depending on which long term memory-predictions are fired

the short term state is emo

so if I have long term memories about navigating emo, I increase my coordination locally

thats why eeg is good for autistics, it literally creates long term memory around how to navigate emo

emo meaning short term sensory awareness

its increasing the depth of your "recursive embedding"

increasing the resolution of your hd infinity looping screen

so seeing yourself between two mirrors is recursive embedding

so is the russian doll

humans have toys to teach each other concepts

so with eeg I'm peak long term learning these state awareness concepts, plus I'm stimulating the conceptual development by triggering larger sequences of memory associations to fire, so that the memories that are eventually formed in single cells after many sessions are extremely big picture high resolution concepts of self

so self coordination rapidly increases,

self understanding rapidly increases,

understanding of others rapidly increases

I'm conceptualizing the processes of my inner state of mind, my long term memory, every function of my brain, and the cosmos, because

some of my neurons have changed their connections to represent gigantic concepts of how my present in the moment state works, in terms of inner coordination.

a0187z
May 1st, 2012
A debate about the physics of neural activity vs free will. My argument from 2012 boils down to 'if you go against preprogramming in your own brain, that is a competing area of your brain, that is acting consistent with the laws of physics, to physically overcome the other area of your brain that you consider to be the pre-programmed area"

Micah Blumberg
the point made here is that competiting neuro patterns will (options in your mind) will physically race to inhibit the other neuro pattern (when neurons fire they inhibit nearby neurons resulting in a cleaner signal) the result (what you believe, say, or do) is determined by physics, you cannot chose to defy the physics that governs your brains mental state. To think otherwise is magical thinking

Bill Harris:
"(A)Fraid not. The one thing you CAN do is go against the preogramming in your brain. You just have to be aware enough to observe it as it happens."

Micah Blumberg
when you say ‘fraid not’ are you saying you can defy the physics that determines the next neural pattern your going to have? the impulse to go against the programming in your brain is ‘the competiting neural sequence trying to dominate another neural sequence’

Chewy Productions Says: Your comment is awaiting moderation.
May 1st, 2012 at 10:24 am
1. We are not going to be conscious of the overwhelming majority of neural firing patterns, just the grand summaries, the peaking news headlines, the most glorious waves!

2. What you want to change your mind your mind to is the action of another competiting neural sequence.

3. So lets reinterpret the mystical “thought/choice energy” as “a physical neuron firing sequence” that is physically firing in an attempt to dominate other “physical neuron firing sequences” or “thought energies”

4. If your mind was not a physical physics governed process then how could something like holosync ever work?

5. You arrived at every thought because of the physics guiding every previous physical thought, every cell in your mind working as well as it does interacting with the full ecosystem of life experience.

6. We fall towards our path, every word we encounter is merely part of our path, its a myth to think that any preponderance of possible paths will lead to anything other than what is already most likely given the physics of things in the unconscious mind, and its interaction with the microscopic world of sensory data patterns.

a0188z
Created Mar 13, 2014, 6:46 AM
(synap, criteria, causation)
Peter Tse "Neuron can't create it's own choice" read a book called "The neural basis of free will: Criterial Causation, by Peter Tse" He remarks interestingly that a neuron cannot change it's own choice, but it's activity can alter the synaptic connections of other neurons, allowing the brain to react to incoming information, so that information criteria, what we think about, is causing the brain to make different choices.

a0189z
Fantasy section for the end of the book that links into mythological ideas (or maybe not for the book, maybe this is just a server note that I leave out of the book, I think its cool but perhaps incidental to the book)
(oscillat)

I like to imagine that once upon a time there was an ancient doctor who deduced that the universe is a fractal oscillator from stars to atoms, and he used this intuition to develop the ability to fix and repair the human body as if it was just a clock, or a mechanical robot, but humanity wasn't ready to understand this technology, so this healer passed a dramatized message down through time by turning medicine into a mystical novelty that would tickle the human mind for centuries until some future medical professional deduced the real non-mystical origin of the original message.

We can say that what defines any religion under the sun is that each is a collection of novel concepts that tickles the human mind for centuries and millenia, each branch of each religion has a different perspective to share that is a configuration of a set of mind expanding concepts that develop civilization.

The stories that unite us are not just stories, they are stories that contain attractors that link to transcendent or timeless oscillators that help to shape cultures across time, but interestingly if the brainwaves in the human mind represent a story, that contains attractors that drive oscillations and drive actions, and these stories working on multiple time scales as explored by Dr. Karl Friston (who does not have a PhD) then perhaps the stories of our mythologies represent attractors that drive thinking patterns on time scales that exceed human life times.

Perhaps the common story of a shared mythology is capable of driving human behaviors on ultra long time scale exceeding human lifetimes.

The good thing about new quantum gravity physics equations is that they don't take up a lot pf space in a book. They are very small and efficient equations. This is just humor I am still trying to wrap my mind around what the real scale of this new 4th section to my book is going to be.

a provisional self aware network patent

and a self aware self driving vehicle pattent which any vehicle with any number of parts such as wheels, or blades, for air, land, sea, or space movement

Quantum Relativity

a0190z.md
biological back prop
https://www.quantamagazine.org/brain-bursts-can-mimic-famous-ai-learning-strategy-20211018/
"A team of researchers led by Richard Naud of the University of Ottawa and Blake Richards of McGill University and the Mila AI Institute in Quebec revealed a new model of the brain's learning algorithm that can mimic the backpropagation process."

"Naud and Richards' new model got around this with a simple change in the canonical understanding of how neurons communicate with each other. We've long known that neurons act as bits, capable of only two outputs, either sending a spike of electrical activity to another neuron or not sending it — either a 1 or a 0. But it's also true that neurons can send a "burst" of spikes in quick succession. And doing so has been proved to change the connections between neurons, making bursts a natural candidate for solving the credit assignment problem. In the new model, the team considered neuron bursts a third output signal, a stream of 1s so close together it effectively becomes a 2. Rather than encoding anything about the external world, the 2 acts as a "teaching signal" to tell other neurons whether to strengthen or weaken their connections to each other, based on the error accrued at the top of the circuit."

"The researchers showed that when a network has more bursts, neurons tend to increase the strength of their connections, whereas the strength of the connections tends to decrease when burst signals are less frequent. The idea is that the burst signal tells neurons that they should be active during the task, strengthening their connections, if doing so decreases the error. An absence of bursts tells neurons that they should be inactive and may need to weaken their connections."

a0191z
note created Apr 10, 2014
(synap, oscillat, dendrite, qualia)

dendrite #1 (of how many articles contain the word dendrite)

Micah:
Ray Kurzweil says this in this book, so how does he think a person's mind can be uploaded if there actually isn't content in the brain. If memories are not actually in your head what is? I think perhaps you have the likelyhood or probability of a particular memory formation sort of stored in connections between cells, and in dendrites, but the memory does not exist until its created in the actual moment it is experienced. I think this means you can upload a probability distribution that increases the chances a mechanical copy of you will formulate a similar memory reaction, but critically there isn't an actual you to upload. Just a chance of you. Stormy with a chance of rain, and a chance of you.
Lets discuss: Ray Kurzweil says this in this book, so how does he think a person's mind can be uploaded if there actually isn't content in the brain. If memories are not actually in your head what is? I think perhaps you have the likelyhood or probability of a particular memory formation sort of stored in connections between cells, and in dendrites, but the memory does not exist until its created in the actual moment it is experienced. I think this means you can upload a probability distribution that increases the chances a mechanical copy of you will formulate a similar memory reaction, but critically there isn't an actual you to upload. Just a chance of you. Stormy with a chance of rain, and a chance of you.
Unlike ·
You and Juan Carlos Kuri Pinto like this.

Black Square
ROFL nice find! Kurzweil is talking out of his arse...
1) Images, videos, and sound recordings ARE sequences of patterns!
2) The fact that memories can be remodeled over time doesn't mean that discrete representations don't exist. And because they are likely stored as averaged patterns that are made specific via contextualisation doesn't mean it isn't possible to construct a particular memory if the appropriate networks were extracted.
3) Yes, I agree with what you suggested about memory being stored as a massive conditional probability distribution that becomes instantiated via contextualisation.
4) I'd add to that by saying that the memory is a "reactive content-addressable memory" in computer science terms. It's storing probability distributions over output sequences in response to input sequences.
1 hr · Unlike · 1

Juan Carlos Kuri Pinto
You don't understand the terminology of Kurzweil. By images, videos and sound recordings, Kurzweil means exact replicas of patterns, just as machines memorize them. By sequences of patterns, Kurzweil means vague abstractions or stereotypes formed through vast experiences captured in real time and stored through mechanisms similar to his pattern recognition theory of mind (PRTM).
1 hr · Unlike · 2

Juan Carlos Kuri Pinto

Micah, the answer is easy. Brains don't have enough memory to store the massive amount of information coming from the senses in real time. [Read Jeff Hawkins' book On Intelligence.] Due to their limitations, brains cannot store and understand all the aspects of Reality. (Try to record an HD video for several hours and you will need several Gb in multiple SD cards. Whereas Kurzweil calculated the whole memory of the brain is just few Gb.) Thus, brains only store vague abstractions (patterns) that later are triggered through content-addressable memories. Reality is the biggest storage of information brains rely on.

Brain damage can occur. Some memories are lost. Brains get repaired. Some pathways are restored. And abstractions are learned again and converge to the same neural attractors because Reality is still the same.
1 hr · Edited · Like · 1

Black Square
Do you have a link to his calculation of the size of human memory?
1 hr · Like · 1

Juan Carlos Kuri Pint
In the same book Micah is reading:

http://www.amazon.com/How.../dp/B007V65UUG/ref=sr_1_1...
How to Create a Mind: The Secret of Human Thought Revealed
www.amazon.com
The bestselling author of The Singularity Is Near explores the limitless potenti...See More
1 hr · Like · 1

Juan Carlos Kuri Pinto
However, be careful that Kurzweil calculated such a number for a human-level AI, not for biological brains. He just made a vague analogical correspondence based on neuroscientific facts and computer science.
1 hr · Edited · Like

Micah Blumberg
When you grew up, did you have the same kind of memory as other people around you? I didn't. Sometimes I can remember word for word what each person has said to me going back years.

http://www.npr.org/.../when-memories-never-fade-the-past...

Some people have extraordinary memories where they can recall incredible details. Things they saw, did, clothes they were wearing, highly visual memories. However their memory isn't perfect. It has flaws. http://www.smithsonianmag.com/.../even-people-with.../...

In using nutrition supplements called nootropics I have had incredible lucid dreams, and during the day I have experienced improved vocabulary, social aptitude, improved hearing, and improved memory.

I suspect that with the right bio-chemical conditions a person's memory could be vastly improved, I think the ability to recall an image, like a person's face, or a song, has nothing to do with a finite limitation in terms of storage space.

I really don't think memories are stored as patterns in the brain. I think the pattern is a temporal thing, consisting of temporary brain activity that links together cells for mere milliseconds in some cases, or cycles through similar branches of cells for a longer oscillation. In this case a memory can't be stored, because which parts of the brain that light up are going to be different each time, different pieces of the brain are going to be different pieces of a memory, so each time you see an apple it can be represented by different parts of the brain, each time you move your hand it can be moved by different parts of the brain.

Patterns are generated in the moment, and they are location invariant, location invariance is possible if what is really stored is just a general probability distribution, and not a sparse distributed representation of an actual image in an actual location of the brain.

When Memories Never Fade, The Past Can Poison The Present
www.npr.org
Only a rare few people have the ability to remember everything that happened in ...See More
1 hr · Edited · Like · Remove Preview

Juan Carlos Kuri Pinto
No person in the world has perfect memory. And the amount of cognitive resolution used for representing analogies is unevenly distributed among persons and among the type of cognition people like. People better memorize and better understand what they like.
1 hr · Like

Black Square
Thanks for looking it up, I appreciate it. You did, however, claim he was talking about the brain, not an AI. looking up the text you posted in a pdf copy of the book, he says he thinks the brain does 200 computations per second, but massively parallelised. The brain works by time-locked loops. 200 Hz simply is incorrect when the superior olive of the owl can measure phase differences in sound waves of 1 microsecond, which corresponds to a figure of 1 MHz.

Though, yes, that is an upper bound, as the owl is an extreme auditory specialist, and that is just for one part of the brain. The mechanism is via coincidence detection using dendritic trees, which highlights there's more going on in the brain than is taught to AI researchers. Dendritic computation isn't even properly appreciated by most neuroscientists, and has only recently has interest in them surged.
1 hr · Like · 1

Juan Carlos Kuri Pinto
Well, in the course Synapses, Neurons and Brains at Coursera, Prof. Segev told us the brain does lots of computations with very unusual mechanisms that are not traditionally modelled in AI simulations.
57 mins · Like · 1

Micah Blumberg
"No person in the world has perfect memory."

Micah says: No they don't, because memory isn't a stored pattern, it's a strong chance of a pattern based on previous experiences.

"And the amount of cognitive resolution used for representing analogies is unevenly distributed among persons and among the type of cognition people like."

Micah says: I think it's possible to increase or decrease the resolution of memory experiences by changing the chemical ecosystem of the brain, in other words formatting is not hard coded like a program, it's dependent on chemical conditions in the brain.
57 mins · Like · 2

Pierre de Lacaze
So given that Micah, how accurate is it to call what the brain is doing "computation"?
53 mins · Unlike · 1

Juan Carlos Kuri Pinto
Black, neurons and glia are complex cells that are made of lots of molecules whose causal mechanisms can be used to compute. Most of the claims for machine superintelligence are made based on the fact we can exploit the full potential of matter/energy for computation. And most AI researchers belittle biological brains by just considering the maximum flipping capacity of neural spikes which are the carriers of information. I think there are more important aspects to consider as you mentioned.
51 mins · Like · 1

Juan Carlos Kuri Pinto
Micah, I prefer NOT to intervene in my brain chemistry. Neuroscientists don't know enough about the brain to safely intervene in its chemistry.
47 mins · Unlike · 1

Black Square
Pierre de Lacaze I'm sure you're familiar with the Physical Church-Turing Thesis. So how is what the brain is doing anything other than computation?
45 mins · Unlike · 1

Juan Carlos Kuri Pinto
Kurzweil's estimate for the computational capacity of the human brain is useful to multiply it by whatever factors future neuroscientists think are relevant for artificial intelligence.
43 mins · Like

Micah Blumberg
"neural spikes which are the carriers of information" Yes AI people who have opinions on neuroscience largely think this is so, but I don't agree. What I am saying is just opinion based on actual neuroscience I have read. I think singular neural spikes can represent just noise. While bursting and or higher frequency patterns can represent but one form of information transfer. Most of information transfer in the brain is probably subthreshold (brain-activity that does not cause a neuron to spike) There is probably a lot of chemical activity involved in information transfer that is subthreshold. I view spiking as a sort of retroactive indicator of brain activity, like blood flow it allows us to "read minds" or "plot" the activity of minds, via implanted electrode chips, eeg, meg, or fmri. The spike, I think, it's just a discharge, like a waste product, removing an excess, and like blood flow it's about removing heat, and reducing the inflammation of cells.
41 mins · Like

Pierre de Lacaze
Black: I'm not arguing that it isn't. Just pondering. In the CS sense, computation essentially boils down to "addition". Given that we do not thoroughly understand the brain and it's chemistry, I have to wonder sometimes if we are not simply imposing pre-defined models of computation on the brain which could possibly preclude us from further understanding. Really just trying to keep an open mind here. I am not thoroughly convinced that the brain is simply a machine. Perhaps a "biological machine", but what exactly does that means and how does that differ from a "man-made machine".
36 mins · Unlike · 1

Juan Carlos Kuri Pinto
From the previous debates I had with Black Square and from the books of Fuster I've read, I conclude spikes are a form of winner-take-almost-all competition in which sensory information is routed through all the huge networks of heterarchical cognits and mutually inhibited to determine the winners. Consciousness emerges when spiking activites surpass certain threshold. It's brain's way of decentralizing pattern recognition. And it also explains human qualia and why machines don't have qualia.
32 mins · Edited · Like · 1

Micah Blumberg
Pierre de Lacaze said "So given that Micah, how accurate is it to call what the brain is doing "computation"?"

Black Square said
"Pierre de Lacaze I'm sure you're familiar with the Physical Church-Turing Thesis. So how is what the brain is doing anything other than computation?"

Micah till the end:
for one thing, logic gates are not sensors, and they are not dissipative systems regulating their own balance.

if cells are like logic gates, then they are like logic gates with their own sensors, and their own internal logic gates

computation is the ordered execution of patterns in a perfect sequence, it's content addressable, and content is not inherently interrelated

memories in the brain, I argue, are not content addressable. their content is a probability, and its generated in the moment, not stored as an pre-developed pattern.

thinking is like an entropic chemical reaction that reorders it's own hard structure like a plant, everything is interrelated, and every analogy effects everything else in the brain, notions dominate each other to control space and develop themselves by restructuring the brains wetware.

thinking converges, extends, and programs contingent reactions into cells creating an increase or decrease in the likely hoods of larger scale firing patterns that are location invariant.

programs on a computer do not restructure the computers hardware or even themselves, they are location dependent, the are specifically coded, they are not probabilities that increase or decrease.

a logic gate cannot sense gravity or light, but apparently individual cells can.

I think that I would not use the word "computation" to describe what the brain does, but I do think that a computing machine could be developed to mimic what the brain does, in hardware and software.

another example:

In a computer data can just ignore other data, until a specific link is written, but in a brain everything effects everything else, analogies can form spontaneously between active ideas
21 mins · Edited · Like · 1

Pierre de Lacaze
Very nicely stated Micah. This is like a model of computation in which the computation itself affects the computation.
20 mins · Unlike · 1

Juan Carlos Kuri Pinto

As Monica and Kurzweil said, brains are limited because they compute with hardware. Their computations are physical, not logical. Whereas computers have RAM which is totally reorganizable. In few minutes, you can reorganize RAM in its entirety. Whereas such operation would require years in biological brains. Moreover, RAM is totally and randomly addressable without restrictions. Brains had to evolutionarily wire themselves by following the pathways of minimum action which explains the theory of Felix Lanzalaco.
177777 mins · Like

Micah Blumberg
"As Monica and Kurzweil said, brains are limited because they compute with hardware. Their computations are physical, not logical. Whereas computers have RAM which is totally recognizable. In a few minutes, you can reorganize RAM in its entirety. Whereas such an operation would require years in biological brains. Moreover, RAM is totally and randomly addressable without restrictions. Brains had to evolutionarily wire themselves by following the pathways of minimum action which explains the theory of Felix Lanzalaco."

I don't agree with that model of the brain either.
1. The actual limitations of the brain are the subject of debate, people can and do instantly change, but the mechanisms about how to cause such changes are disputed as well.
2. I want to bring into this conversation the brain as a pile of sand idea, it's suggests that the brain might be resistant to change because of it's entropic structure, but if that structure can be understood it might be possible to cause rapid restructuring of the brain, as quickly as wiping ram and adding in a new program to replace it.
http://www.scientificamerican.com/.../sand-pile-model-of.../

Sand Pile Model of the Mind Grows in Popularity
www.scientificamerican.com
Support is growing for a decades-old physics idea suggesting that localized epis...See More
9 mins · Like · Remove Preview

Micah Blumberg
"Consciousness emerges when spiking activities surpass a certain threshold."

I think spiking emergences as a result of a significant quantity of sub-threshold brain activity, the consciousness qualia isn't in the spiking, it's not caused by the spiking, but instead the spiking is the result of conscious qualia, a way of dissipating energy in the aftermath of large scale brain activity that is conscious. It's a different interpretation of the same data that shows us when people are conscious they have a lot of brain activity.

I don't know what you are writing on your ipad there. What is it? Why can't I get inside your head? What do you know? Please tell me.

a0192z

feedback structure to improve the flow

he thinks that conscious is just the electrical activity, and its not the brain

and that the brain is just the container for this floating consciousness and

neural networks can be creative they can generalize

but bots, physical robots, and chat bots,

a cybernetic

global workspace theory

issue was with integrated information theory

the brain activity patterns

brain activity doesn't have decoders, so it can't observe information

the four forces system of creation

convection patterns
"Convection cell" they warm it up at different rates to form different patterns, to it contains information

scaffold

fashion

mens fashion men and women

a tree was observing the sun in a sense, observation was necessary to react to the sun

virtual patterns interacting
non-physical information patterns that require physical substrates to move between... !!!!

not the electricity
not the brain tissue

order out of chaos
information out of noise

Category; Brain Computer Interface EEG & Virtual Reality

looxidlink from looxidlabs is a tool for integrating EEG signals into a VR program.

consciousness in the cosmos is not in a rock

if we know what consciousness is

the spectrum from a rock to a human mind, it doesn't consider computers
computers have vastly more complexity than a rock, but the are less general in their thinking than simple insects, despite having vast complexity

why aren't computers conscious?

Why are brains conscious and computers not consciousness?

It's because brains are doing a very special process that leads to consciousness

(integrated virtual models)

computers take information and pass it,
can it be accuracy?

render, describe, or process, to what accuracy?
what is their response-ability
the ability to ignore their surroundings, and move your frame of reference, take yourself out, and put your referential frame into another

you need shadow to see any shape?

Mixel talked to Don Hofman? filtering complexity out to make sense of things we love.

a0193z
(oscillat, array, dendrite, qualia) dendrites
He does not think about oscillations, or gamma waves as having a role in readying cells to receive and rapidly erase what they are seeing, so what I am saying is that the firing of a neuron imprints a qualia representation of reality onto the live oscillation by having that one neuron step out of the regular oscillation it makes a difference in the temporal pattern that the neurons would detect materially.

thalamocortical network, global phenonominom.

so everything that your eyes see, the collected patterns that move through layers of networked neurons, those patterns are bound into a mind space image when the dendrites flash, and the oscillating bundle of neurons takes notice and notices that flash because its the only thing not in

oscillation, then it gradually merges back into oscillation, but the oscillation itself is integrating information live in consciousness.

the global workspace theory

a0194z
Note created Aug 24, 2011

Mike Dow
freedom is not some abstract concept but your very nature. unbounded, infinite, void of self. awaken to this.

Micah Blumberg
I think perhaps "the void of self" is a redefinition of what people call the "I am self" nothingness, or no self is another way of referring to that which is, or isn't, might be, or is sometimes, or is always even if we are not always aware of it.

Mike Dow
it is simply awareness that there is no independently acting self. no where.

Micah Blumberg
yeah, so like there was this scientists, at the dog park, telling me he once advised Nasa Astronauts on how to quit smoking. Going into his theory, he said something that made a lot of sense. There is energy, and there is information. That's it, energy, and information. So body/brain/mind is the energy, and it's label is the information, it's properties are the information. We can label it "awareness" we can label it "no self" and we can label it "self" the only thing you've changed is a label, changing the information. So if someone saids this experience here, this energy, is awareness, then ok, no right perspectives, just perspectives, if someone says this is myself, then ok, no right perspectives.

Mike Dow
that is a bunch of words :) i'm too lazy to type that much right now. i'm not labeling anything. just recognizing cause effect cause. and watching it all unfold.
but i like your style
ok. i'm inspired. words define, give meaning, help communicate. if you say i am anything there is self there is identification. no self. simpler. more direct. identify with what you like. your going to anyways ;)

Micah Blumberg
when people are born, their family trains them into a social contract, one in which they learn to repeat a pattern of identity, these are my eyes, my ears, etc... it's just a pattern that is part of our social contract.

Mike Dow

oh, i'm aware my friend. don't interpret me as saying i have found the end all be all.

Micah Blumberg
The original illusion is just as valid as any higher realization, because there are no right perspectives

Mike Dow
still, i disagree that no self is a social contract. this would only be if it was understood as a dogmatic truth, not a living reality. it isn't something that has been gained but something that has been lost.
if i'm not mistaken tozan completes it all with the marketplace. like chop wood, carry water. i get that.

Micah Blumberg
Gained or lost are just motion-based metaphors. To your brain, there's no practical difference between something gained and something lost. The whole idea that a group of people can vet your enlightenment isn't right, because we can't judge the enlightenment of other human beings without bringing in our own neurosis to the picture, or our groups neurosis. Enlightenment & Ego are not things that can be gained or lost. Either self exists or it doesn't, there is neither gain or lost that is even possible. Everyone is either enlightened or every is not, because enlightenment is a collective truth, a realization of that which is already true. If the whole universe including everyone else, including yourself is enlightened, then that's enlightened. To think some people are enlightened and other people are not enlightened is shadow neurosis. (unconscious projection)
freedom is an abstract concept unfortunately
either we all have it, or we all don't
At night I walk on an atomic cloud, my dogs and I are also made from this atomic cloud so it's ok. I try to think of a story that will explain my grandfather who is now a great grandfather to my niece. A story that will explain the silence, like something is being with held. It's as if one day my grandfather was in his garden, and he discovered a human head, not just any human head, but his own head, and it was growing out of a plant, a plant that had roots going into the ground, a plant that had branches and leaves like any plant. A plant that was growing a duplicate of my grandfather's head. With working eyes, eye lashes that blinked, that looked at you, silent, blank look. As if there was nothing to think about, it just was. Like we just are. Something that grew from an egg, was pushed out of it's mother, in a rather upsetting ordeal called birth. What are we if not fractal shapes, things that just are, the humming bean, or human being.

Plants Found to Send Nerve-Like Messages
http://www.nytimes.com/1992/11/17/science/plants-found-to-send-nerve-like-messages.html

a0195z
dreams
dreams like the self, are sequenced neural concepts that are connections between cellular memories evoking theta brainwaves ~ this is the dream where guantama buddha has given us a

false premise, to be happy, you must discover your original nature, this, this is it, breath the air, look around, this is your original nature, you are spacetime, you are the sky, you are the stars, you are the expectations of your breath and mind ~ its a false premise because you were this before you discovered you were this, and because all that changed was a new connection in your brain, a new conceptual pathway to another branch of memories ~ its a false premise because like the catholics original sin, it assumes you to be unhappy, until you go through the ritual observance, commitment, binding social contract, dedication of your life, and acceptance by a master yogi ~ all this for a simple conceptual realization that you never needed to be happy, as nature, you can be happy, without ever knowing why you are happy, without ever discovering the concept of your true nature, how many happy children exist? how many happy monkey's, how many happy dolphins? how many happy athletes? how many happy people who are not catholic and not aware of Buddha and Yoga? because its a lie, the Buddha is a liar

a0196z
(oscillat)
EDS Expert Data Structures (the morphology of the synaptic pattern of the dendrite + the precise exosome/vesicle releases that in some instances carry rna/dna messages (Cellular Oscillating Tomography link here)
nested oscillating (expert) data structures: capable of learning patterns that are invariant to scale, time, space, and phase, punctuated by phase changes

each neuron in an oscillatory fires in turn
in a cortical column oscillator

"Metastable Oscillatory Modes emerge from synchronization in the Brain Spacetime Connectome"
"brain rhythms are a signature of metastable synchronization, occurring at reduced collective frequencies due to delays between brain areas."
https://www.biorxiv.org/content/10.1101/2022.01.06.475196v3

Generative Models of Brain Dynamics
"In this paper, we demonstrate why focusing on the multi-scale dynamics of the brain is essential for biologically plausible and explainable results. For this goal, we review a large spectrum of computational models for reconstructing neural dynamics developed by diverse scientific fields, such as biological neuroscience (biological models), physics, and applied mathematics (phenomenological models), as well as statistics and computer science (data-driven models). On this path, it is crucial to consider the uniqueness of neural dynamics and the shortcomings of data collection. Neural dynamics are different from other forms of physical time series. In general, neural ensembles diverge from many canonical examples of dynamical systems in the following ways:"
https://www.frontiersin.org/articles/10.3389/frai.2022.807406/full?fbclid=IwAR1Xds9RN7BFJPO7HYkPqc0IvSAVpdywkYrxDN5V0WglXAGNgKqdpaWJkG0

Zero-Shot Text-Guided Object Generation with Dream Fields
When I close my eyes and say the word tomato I see a tomato, I see red, I remember properties of the tomato like the taste. Zero-Shot Text-Guided Object Generation with Dream Fields points us to an analogy of how our brains, with Neural Oscillatory Tomography or Neural-Array Projection Tomography can render the graphics of a tomato, and render the taste of a tomato in our brains.
https://arxiv.org/abs/2112.01455

"Identifiability analysis and noninvasive online estimation of the first-order neural activation dynamics in the brain with transcranial magnetic stimulation"
The importance of Dendritic morphology for memory & neural firing, sub reference "Neurons demonstrate very distinct nonlinear activation dynamics, influenced by the neuron type, morphology, ion channel expression, and various other factors."
https://www.biorxiv.org/content/10.1101/2022.07.14.500136v1

"Switches to rhythmic brain activity lead to a plasticity-induced reset in synaptic weights"
"Synaptic connections are functionally strengthened or weakened to form new memories through synaptic plasticity rules that strongly rely on neuronal rhythmic activities. Brain information processing, on the other hand, is shaped by fluctuations in these neuronal rhythmic activities, each defining distinctive brain states, which poses the question of how such fluctuations in brain states affect the outcome of memory formation."
"By combining computational models of neuronal activity switches and plasticity rules, we show that switches to rhythmic brain activity reminiscent of sleep lead to a reset in synaptic weights towards a basal value."
Holy shit, sleep literally resets your short term memory
https://www.biorxiv.org/content/10.1101/2022.07.15.500198v1

a0197z
(oscillat, electromagnetism)
Electromagnetism vs Magnetism vs Electricity

Think about the fact that opposite charges attract each other,

imagine that a neuron is gradually collecting charges but it's process is displacing positive & negative ions, polarizing positive & negative ions which creates a sort of kinetic threshold of stored potential that is increasing over time, eventually resulting in a collapse, like a blown circuit, where an action potential event happens, or a lightning strike happens, or an avalanche on a mountain happens, a tipping point event.

So the ionic gradient is constantly readying the neuron to fire when its not firing and not being inhibited.

What is tripping the circuit breaker however is

It's not just when the action potential fires, it's by how many other receptors it touches and what frequency changing messages it is giving them, whether that message

because neurons transmit frequencies to other neurons, but they have collective learning patterns, neurons that fire together learn the same patterns together, so that patterns live in the oscillations memory, distributed many times across the entire oscillation, so that the learn patterns have invariant neural representation.

a0198z (similar to note a0114z)

time dilation oscillates, because spacetime oscillates, time is a wave, just like spacetime.

My guess is that a particle/wave is like a phase variance from the fabric of oscillating spacetime. In other words if spacetime had a default wave pattern, a particle exists as a difference from the spacetime wave pattern in terms of a change in its frequency / magnitude ratio or from another perspective a change in its velocity / mass ratio

as the particle/wave increases in magnitude / mass it decreases in frequency / speed. As it increases in speed / frequency it decreases in mass / magnitude

1/f describes the ratio of amplitude to frequency as being inverse in macroscope EEG measured brainwaves.

If we replaced the word amplitude with magnitude in this instance of measuring EEG waves would the ratio still apply? Can we say that in the instance of brainwaves as measured by EEG that magnitude also has an inverse relationship with frequency?

"High Variability Periods in the EEG: A New Temporal Metric that Reflects Brain States
https://www.biorxiv.org/content/10.1101/2022.06.27.497770v1
(relevant to the question of whether we can replace the word amplitude with magnitude in EEG Studies, because the wave shape is really magnitude, a combination of amplitude & duration)

Divergent cis-regulatory evolution underlies the convergent loss of sodium channel expression in electric fish
https://www.science.org/doi/10.1126/sciadv.abm2970
(relevant to the question of how to make electric fish, but also relevent to exploring the topic of what neurons are sensitive to on the dendritic side, and thus what kinds of soliton wave signals are possible between cells)

New Targets for Treating Parkinson’s Disease Discovered (add to the research map on Neurodegenerative Disease)
"The current proof-of-concept study reveals that one group of experimentally engineered cells performs optimally in terms of survival, growth, neural connectivity, and dopamine production,

when implanted in the brains of rats. The study demonstrates that the result of such neural grafts is to effectively reverse motor symptoms due to Parkinson's disease."
https://neurosciencenews.com/parkinsons-t-cells-20233/amp/

"Designer neurons offer new hope for treatment of Parkinson's disease"
https://www.sciencedaily.com/releases/2022/05/220511123615.htm

copper is toxic, don't touch pennies
"Copper Leads to Protein Aggregation in Parkinson's Disease"
https://neurosciencenews.com/copper-parkinsons-20979/

How to make spatial maps of gene activity — down to the cellular level (important for solving Neurodegenerative Diseases)
https://www.nature.com/articles/d41586-022-01743-7

Capturing Cortical Connectivity Close-up
(advances in medical imaging bring us a step closer to being able to upload the mind into an artificial brain)
https://neurosciencenews.com/cortical-connectivity-20660/

"Stretchable sensor measures neurotransmitters in the brain and gut"
https://physicsworld.com/a/stretchable-sensor-measures-neurotransmitters-in-the-brain-and-gut/?fbclid=IwAR1FiPuw4bMNjPhKuEIp_CyAWWLF2cUdy0pvlgA4rCinmoBPdZUdxDsqmyg

Waveform detection by deep learning reveals multi-area spindles that are selectively modulated by memory load
An interesting research direction that could be relevant to uploading the mind not sure yet.
https://elifesciences.org/articles/75769

Theta oscillations in the human hippocampus normalize the information content of episodic memory
(Relevant to my argument that tiny variations in Theta oscillations represent the unconscious expectations & tonic renderings of reality that constitute the mind that is produced by the brain.)
https://www.biorxiv.org/content/10.1101/2022.06.27.497705v1

Triple dissociation of visual, auditory and motor processing in primary visual cortex
Relevant to the above argument, ie how the brain produces the mind
https://www.biorxiv.org/content/10.1101/2022.06.29.498156v1

Granger causality analysis for calcium transients in neuronal networks: challenges and improvements
Relevant to the research map on "The Flow of Information in the Brain"
https://www.biorxiv.org/content/10.1101/2022.06.27.497721v1

A global method of generating action potentials and EEG oscillations in a topological surface network Model Predictions and Speculations
(Relevant to the argument that we can create conscious living beings inside computer hardware, via simulated oscillations)
https://www.biorxiv.org/content/10.1101/2022.06.25.497598v1

Involvement of CaV2.2 channels and α2δ-1 in hippocampal homeostatic synaptic plasticity
(relevant to my Synaptic Unreliability Article, and the question of whether Calcium channels open for greater durations to increase the quantity of vesicle release, relevant the model of the neuron, model of neuron, neuron model, and relevant to the variability of neurotransmitter release in the synaptic cleft (how and why that happens)
https://www.biorxiv.org/content/10.1101/2022.06.27.497782v1

New Map of Meaning in the Brain Changes Ideas About Memory
https://www.biorxiv.org/content/10.1101/2022.06.23.497305v1

since space is a wave, and since space and time are unified, time dilation is a wave

time dilation at the quantum scale is also a wave

which means gravity oscillates like a wave
and that means
antigravity or anti-gravity propulsion might be a splay state oscillation to the oscillation frequency of gravity

https://openreview.net/forum?id=BZ5a1r-kVsf&fbclid=IwAR2DgUYpslph0qsY0Rrg2EuJsvpVa7yxiNhOjl1nVS2cBEb5fR0tx2tddRM

https://biorxiv.org/cgi/content/short/2022.06.27.497782v1

https://biorxiv.org/cgi/content/short/2022.06.27.497770v1

validates predictive coding
"Position representations of moving objects align with real-time position in the early visual response"
https://www.biorxiv.org/content/10.1101/2022.06.26.496535v1

 # The story of the neuron
The story of a neuron suggests an outline or a flow or a sequence of topics to cover in order for a given section.

dendritic synapses

mechanosensitivity,

pressure soliton waves

acoustic sensitivity

electrosensitivity

magnetic sensitivity

heat sensitivity

neurotransmitters

dopamine

gaba

acetylcholine

serotonin

dendritic side ion channels

potassium

sodium

chloride

exit terminal side ion channels

calcium

calcium subtopics, amplitude, duration, magnitude, release

vesicles

multivesicular bodies

multi-vesicle release

subtopic: varying levels of neurotransmitter release, dopamine, gaba etc....

a0199z
(tomography, hippocampus, LTD, thalamus, oscillat, field, synap, cortex, fourier, ATP) evidence that synaptic configurations are how at least some of our memories are stored.
https://medicalxpress.com/news/2021-10-scientists-gain-brain-cells.html

memory via synaptic configuration is one argument but it does not exclude other possible ways for the brain to transmit data as acoustic waves & mechanical wave patterns, with or without microtubule memory systems that might re-configure synaptic configurations, and it does not exclude the idea that the cells magnetic dipole shape might be changing the brains phase field which might effect charge buildup in one area or another at the synaptic scale. With all three memory times potentially affecting synaptic configuration there are 3 intertwined sensor modalities storing correlated time series of wave patterns with dimensional characteristics (amplitude, frequency, and mechanical to electric-acoustic soliton wave forms inside the envelop defined by the frequency / amplitude inverse relationship. So its like the pre-synapse is a loud speaker that spits, and the post synapse is like a microphone that counts spit as a charge build up (ions & atp) and then various stages of energy release happen cumulating in an action potential that in a sense is transmitting a phase pattern to its post synaptic network, the network sort of magnifies the pattern, deconverges it, and multiple patterns overlay each other, from different neurons to different areas of the brains network

the multi-layered deconvergence will add distinctions to each iteration of a pattern, this process I imagine would be useful for both error correction, with the most consistent patterns learned gaining dominance through a sort of oscillatory convergence of firing over time, with many subsequent stages of firing across layers, across columns, all over the brain, repeating fractally at different scales.

I think it could similar to the "voting" process described by Jeff Hawkins from Numenta was talking about in his book "A thousand brains" How the brain could be making many slightly different representations, maybe thousands, in each area of the cortex, to represent the same things with different sensory perspectives.

I can see how oscillatory wave convergence into power bands and large dipoles might improve the brains internal models, in a similar way to how tomography works by combining multiple perspectives and the computer basically learning a 3D model from intersections between 2D perspectives. This is defined in the Fourier Slice Theorem. A row of neurons in another layer would also act as a force of pattern convergence, and pattern magnificationthrough LTD or the inhibition of lots of post synaptic cells, that begin to oscillate together because they each reached their threshold when that one neuron fired.

Their (the post-synaptic group of one exit terminal) group shared a common temporal oscillation (the LTD neurotransmitter event) so they fire together, and the next row then fires together, the whole oscillator simulaneously learns many versions of the same pattern everywhere, stored in

the synapses, but magnified in the vertically oscillating cortical column, and magnified horizontally across the brains interneurons between pyramid cells, plus the other highly connective brain areas. Including the corpus callosum, the parietal temporal junction, the thalamic bridges and this high level horizontal pattern might be coordinated with help from the hippocampus and the entorhinal cortex which may also have an oscillator that is magnifying learned firing sequences. I am preferential to the idea, written about in "A thousand brains by Jeff Hawkins" that the cortical column is actually functionally mimicking the grid cell and place cell everywhere in the brain. That's interesting especially if this idea of consciousness being a rendering or an image that has to exist somewhere now has to include some idea of how the results of the entorhinal-hippocampal loop connects to the thalamus in way that might bridge information with the neocortex otherwise

a0200z
(oscillat, emotion, vector) fast flows and slow flows, slow is stable,
the unstable fixed point, when you have many arrows you go fast

In dynamical system theory,

a second axis

what if we had an imaginary axis, where we could plot a flow between stable oscillation that returns to a center slow and stable and unstable oscillation

the oscillation between a positive oscillation and a negative oscillation

what I am seeing are the changes between tonic firing neural oscillations, and phasic fast unstable firing patterns

but perhaps the patterns are pulled in two directions

the idea is that in order for reality to have real time impact on my brain the new sensory information has to materially change my brain tissue to create an update for each new piece of information in the rendered environment.

so if my sense of the complexity of the environment is something I am thinking about then my brain tissue is also rendering this environment in real time.

Eventually then an educated person because to model the whole of the earth and space beyond earth just in their mind, in their brain tissue.

People can start to develop emotionally when they stop watching tv and movies.

What I like about the Fast & the Furious is that it has that feel like the Dukes of Hazard had before I understood what racism was.

Do you see?

Gaussian distribution creates a linear system with a stable distribution point.

The brain selects a mostly guassian distribution pattern of energy to have the most stable brain oscillations most of the time, the brains delicate oscillations have the ability to turn the brains oscillations into renderings that are equal to version of the human experience of reality.

Does a neurons positive oscillation have some temporal cadence with a certain point in it's negative oscillation flow? is there an equilibrium between the high point and low points of the oscillation flows.

I like that he is adding in imaginary vectors in order to plot the changes in the data in increasingly higher resolution

imagine a computer calculating how the incoming signal pattern renders a vast grid of representations

when are we uncoupled.

a0201z
(oscillat) for the human being state happens too fast for you to understand it as state

the finite state machine reality of the human brain is that all possible thoughts exist in the spectrum between .0002z - 600hz multiplied times the sensitivity of each neuron.

but imagine that it is just like the frames of your mind, except that between 0.002 and 600hz there is a lot of rangle for the oscillation based spectrum delta of the canvas of your conscious representation of reality in a perpectual loop of microscopic and macroscopic self updates. You're mind is being perpectually rebuilt in every moment in time.

you could write a movie script about a man who changes genetically in an involuntary way so his skin tone changes, and the shape of his face changes, and people assume different racial identities based on his appearance, and this movie would play with the minds of people watching to help them disconnect their minds from their physical attributes a little bit, and it might open their minds a little bit.

a0202z
(observer, vector)
From the first ideal to the best ideal, that is the imaginary vector for calculating new representations, new vectors that represent pieces of noise or sensory

Pieces, sensory pieces like m&m pieces in you teeth, but insteadin your squish gray matter instead

one perspective is that there is a self that makes choices
another perspective that the self just observers
another perspective is that a universal model of self plays all the roles of all the people
another perspective is that multiple variations on universal self model of are playing conductor roles in the minds of large numbers of people, collective identities
another perspective is that the universe is someone else's mind
another perspective is that there is no self

I like the idea that each person is their own universe, all the people interact in the multiverse which unites the universes represented by different people, the big bang started at the moment you were born, and the big bang is like an ever present now moment, with countless new

essentially

a0203z
(synap, oscillat, cortex)
I believe that connections between nerve cells are mostly random and also fractal. I think that the shape of organs and the body is the result of gene interactions, and morphogens
http://www.iflscience.com/health-and-medicine/turing-solves-mystery-how-we-get-fingers-and-toes-60-years-after-death

and protein attractors http://phys.org/news/2014-06-team-theory-cells-differentiate.html

because of these (call them epigenetic?) mechanisms, my bet is that hard wired instincts are not wired, but instead are statistically likely behaviors based on the structure of the biology

The pyramid cells in layer six of the neocortex that have up to two hundred thousand connections to other cells are thought by some to be connected to be like wake up cells, they need lots of connections to sort of wake up the whole brain and get all the other cells into a tonic state of essentially Gaussian oscillations.

DNA is involved in the structure of the brain and I have brought a couple links to explain how that is possible.

1. First of all dna acts as a switching mechanism, that causes cells to differentiate at different times through a rather simple chemical process
http://phys.org/news/2014-06-team-theory-cells-differentiate.html

2. The overall shapes of the various parts of the brain are accomplished through morphogens that systematically activate or inhibit where cell growth occurs, resulting in the familiar body shapes we all see in biology.

http://www.iflscience.com/health-and-medicine/turing-solves-mystery-how-we-get-fingers-and-toes-60-years-after-death

Synapses, the connections between nerve cells, are thought to be mostly randomly formed, being both Gaussian and fractal in overall distribution.

I believe that every human has the right to know how their own brain, mind & biology works, because with that knowledge you gain the agency to fully accept yourself & others, & the knowledge of how to heal yourself & others. Ideally I want every student to learn neurophysics.

However there are situations when tiny transcriptomic errors, from something someone may have eaten accidentally, or resulting from some injury, that could lead to cascading effects such as in PD, that lead to corrupt decision making. So I proposed a Medical Justice System.

but I was not the first to propose the idea of a merger between Medicine & the Justice System. I recommend the book Incognito by David Eagleman for his take on the future Medical Justice System (It's where I got the idea for my proposal)

a0204z
(graph, perception, field, array, conjecture, cortex)

seat of consciousness

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"the following text is from the article linked above, you did not write this, fyi"

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http://m.nautil.us/blog/are-the-brains-electromagnetic-fields-the-seat-of-consciousness
"Are the Brain’s Electromagnetic Fields the Seat of Consciousness?
Posted By Tam Hunt on Oct 27, 2020

Our General Resonance Theory of consciousness, a framework with a panpsychist foundation, may, at least in theory, provide more complete answers to the full array of questions the hard problem of consciousness poses.Image by Illustration Forest / Shutterstock
How does consciousness arise? What might its relationship to matter be? And why are some things conscious while others apparently aren’t? These sorts of questions, taken together, make up what’s called the “hard problem” of consciousness, coined some years ago by the philosopher David Chalmers. There is no widely accepted solution to this. But, fortunately, we can break the problem down: If we can tackle what you might call the easy part of the hard problem, then we might make some progress in solving the remaining hard part.

This is what I've been up to in recent years with my partner in crime, Jonathan Schooler, a psychologist at U.C. Santa Barbara. Since I came up in philosophy, rather than neuroscience or psychology, for me the easy part was deciding the philosophical orientation. Schooler and I duked it out over whether we should adopt a materialist, idealist, panpsychist, or some other position on our way to a complete answer. I am, as I've written in Nautilus before, a card-carrying panpsychist, inspired by Alfred North Whitehead, David Ray Griffin, David Skrbina, William Seager, and Chalmers. Panpsychism suggests that all matter has some associated mind/consciousness and vice versa. Where there is mind there is matter, where there is matter there is mind. They go together like inside and outside. But for Jonathan, this was far too glib. He felt strongly that this was actually the hard part of the problem. Since he's the Distinguished Professor and I'm not, we decided to call this philosophical positioning the hard part of the hard problem.

Consciousness is a snapshot of time.

In a 2019 paper published in Frontiers in Human Neuroscience, we laid out our General Resonance Theory of consciousness, a framework with a panpsychist foundation that may, at least in theory, provide more complete answers to the full array of questions the hard problem of consciousness poses. The easy part of the hard problem is the "combination problem," also known as the "boundary problem." It's a challenge not only for panpsychist approaches to consciousness, but also materialist approaches: How do parts, like neurons, combine into a whole, a single consciousness? For panpsychists, the question gets more precise: How do micro-conscious entities (whatever they are) combine into macro-conscious entities, like human or cat consciousness?

Our answer, in short, is this: Things that resonate in proximity to each other will, under certain conditions, achieve a shared physical resonance, and thereby a combined consciousness. This shared resonance refers to frequencies, or cycles per second. And it's looking more and more likely, as data comes in, that the key frequencies at issue for human and other animal consciousness is electromagnetic field resonance of various types. This is measured by tools like electroencephalography and magnetoencephalography. By achieving a shared resonance, the bandwidth and speed of information flows increase remarkably, allowing far more energy and information to flow between the constituents. This will, all else equal, result in a new higher-level consciousness. Where before there was a lack of resonance and rather chaotic energy and information flows, now there is a smooth transfer of energy and information. We call this "the shared resonance conjecture" in our theory.

For us, this combination of consciousness, through shared resonance, does not squelch the consciousness of smaller conscious entities—they continue as parts of the new larger whole. "The many become one and are increased by one," as Whitehead put it succinctly in his work.

In the context of neural information flows, the specific shared resonance is known as neural synchrony. This kind of synchrony is a well-established phenomenon key for brain processes and human consciousness. Neural firing patterns and electromagnetic field phenomena more

generally can achieve synchrony across distant parts of the brain and, thereby, form a larger and more complex consciousness—which leads to our second conjecture: the “boundary conjecture.” This states that the boundaries of a consciousness like ours depends on the velocity and frequency of the resonance chains connecting its parts.

What do boundaries even mean in the context of a seemingly immaterial thing like consciousness? What we’re referring to is the boundary of the physical energy and information flows that provide the content of consciousness. It’s something like axiomatic that for any information (like perceptions or internally-generated thoughts) to become part of consciousness, in each moment that information needs to reach the physical geography generating that consciousness. This would be the brain, in the case of humans and other animals (though not exclusively the brain, as we’re learning).

If, for example, a gunshot is fired in Mississippi at 12 noon, the sound of that gunshot is not going to be part of the consciousness of a person on the top of Mount Everest only a minute later. That information simply can’t reach our person on Everest in that timeframe. Velocity matters. And bandwidth matters for similar reasons: If there’s not a big enough information highway, then some information may not make it. Consciousness in each moment is a function of the information that reaches us. But that’s only half of it. It’s also a function of the processing of that information.

For example, visual information from the retina is highly processed by the retina and the brain before it becomes visual perception in our consciousness. Light falls on the retina, goes through various layers of neurons, is sent down the optic nerve across the brain, and then all the way to the back of the brain where the visual cortex resides. It’s then processed further by visual cortex and then, somehow (we still don’t know the full details) that information becomes visual imagery that includes colors, lines, shadows, along with the affect that accompanies our visual perception, such as the pleasure of beholding a beautiful work of art, say.

It’s for these reasons that, in our theory, the capacity for phenomenal consciousness in each moment is a product of sensory information (what we call the Perception Index) multiplied by internal processing (what we call the Connectivity Index).

In very simplistic mathematical terms (the actual equations are a little more complex):

Omega (our term for the capacity for phenomenal consciousness) = the Perception Index x the Connectivity Index.

In this view, consciousness is a snapshot of time, integrating the available information into a single conscious moment. In fact, there is good data showing that the resolution of human visual consciousness is about 1/20th of a second. That means we can perceive about 20 changes in our vision per second. That’s pretty good but, of course, the universe moves much faster than this, so we miss an awful lot of what is happening around us.

This temporal resolution is a kind of edge or boundary—a temporal boundary. The “frame rate” of our visual consciousness—about 1/20th of a second—is also the limiting factor for the visual data that can reach our consciousness. If, for example, a visual image of a volcano exploding 20 miles away can’t reach our retina within 1/20th of a second, then it won’t be included in that snapshot of our consciousness. Light travels in a vacuum 300,000 kilometers per second, so this particular information would have no problem reaching us in 1/20th of a second. But something farther away, like an extraordinarily unlikely explosion of the Olympus Mons volcano on Mars, would not, if we were looking through a telescope, reach our retina in 1/20th of a second, so it would not be integrated into our next snapshot of consciousness. It would come in a later conscious moment. So the velocity of information flows, and thus their distance, also are reflected in the boundaries of our consciousness.

I’m happy to report that we are now starting to investigate our theory experimentally, so stay tuned for more on the boundaries of consciousness. It’s an exciting time to be expanding these scientific frontiers.

Tam Hunt is a scholar and writer affiliated with U.C. Santa Barbara. He is the author of Eco, Ego, Eros, which explores panpsychism across various fields, and blogs at Medium.

If you are a researcher studying electromagnetic field theories of consciousness please consider making a submission to our special research topic at Frontiers of Human Neuroscience."

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This text above is from an article: I did not write this article. FYI

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a0205z
Oct 22, 2013
(oscillat, cortex)

I have a hypothesis that it's a mistake to be annoyed by others. It means that other people are not living up to your expectations . People are not matching your vision of what could be. This annoyance becomes the driver of imposing one's will on others. So then an invisible ego is causing you suffering in the form of annoyance because of this desire to impose one's will on others. The only way to break that annoyance is to realize it's a mistake, then a lower oscillation pattern will enable change that relieves the annoyance. When I realize that I have made a mistake, when I see that I am wrong, my brain switches to a lower frequency oscillation that enables change.

""What they saw in those rats compared to rats who didn't get the drug, was that the low-frequency waves did not occur in the motor cortex, neurons there did not fire coherently and the rats did not alter their subsequent behavior on the task.
Although the researchers were able to study the cognitive mechanisms in the rats in more detail than in humans, the direct parallels they saw in the neural mechanics of adaptive control were significant.
"Low-frequency oscillations facilitate synchronization among brain networks for representing and exerting adaptive control, including top-down regulation of behavior in the mammalian brain," they wrote."" http://www.sciencedaily.com/.../2013/10/131020160731.htm

a0206z

self

When it comes to who you are, in the context of neuroscience, I think György Buzsáki is correct that people are not born as blank slates, the human body has natural preferences. I agree with Yann LeCun that humans have specialized intelligence, not general intelligence.

Yet looking at the story of Phineas Gage or reading Oliver Sacks & Michael Gazzaniga's work on Split Brain Patients you know that personalities do change. You may not be able to change yourself with willpower as that's a paradox, but that doesn't mean you won't change over time.

self as a phase field

Per the realizations I have since publishing my notes on the neurophysics of consciousness I think of myself as like a cube of oscillating brainwave patterns, or a volumetric phase field, I think of others as like cube shaped volumetric phase fields also. Our bodies just carry it.

The cube shape is not essential to my imagination but it helps clarify that it a 3D dimensional stack of phase changes happening in the brain exist temporarily and spatially to model reality in the brain's natural 3D graph, via the neocortex & the hippocampal-entorhinal loop with all the brain's network connections including the thalamic pathways.

Our brainwaves are maintaining this 3D rendered phase field that represents our expectations for the movements of entities in our sensory awareness. The phase field, including the light field, represents our decoded and tomographically constructed 3D simulation of reality, the world, other people, our environment, and ourselves.

The different models that we have help the organism to plan its actions, actions that accomplish the maintenance of its own equilibrium and the equilibrium/stability of its environment.

space as a phase field

I think that space is expanding & contracting at the moment. This moment is within its holon that is an ever present moment. The expansion & contraction of spacetime are the forward & backward movements of relative time. The movements of relative spacetime are within an ever present absolute now time. The ever present now time has no space (relative to the time that is space as we know it) and spacetime as we know it is sort of eternally folding on itself in giant loops (like a pretzel).

In a sense in this model spacetime as we know it is plausibly an eternally looping structure, and absolute time is equivalent to non-existence, or it is the infrequent frequency range (non-existence has no frequency interval, so it never happens. Ever present time (eternal absolute unchanging) is a bad point in the context of bad points as mentioned in the book Sync by Author Steven Strogatz) Since it can't be affected by the harmonic oscillator that is spacetime we can infer that spacetime never begins & never ends.

space as a fractal neural network

Space time is the eternal golden braid, and spacetime could be thought of as the fractal of a neural network, but without the time-frequency characteristics that exist for human scale (magnitude & frequency of information patterns) that define conscious data, vs unconscious data.
Gödel, Escher, Bach: An Eternal Golden Braid

The earth's time dilation field, responding to the earth's mass, moves very slowly from a human perspective, but in a sense it's ripping space apart as earth moves through it, disporting space as it moves through space

"New Research Shows the Earth’s Inner Core Oscillates – Causes Variation in the Length of a Day"
“The coincidence of those two observations makes oscillation the likely interpretation.”
https://scitechdaily.com/new-research-shows-the-earths-inner-core-oscillates-causes-variation-in-the-length-of-a-day/amp/
Reference: “Seismological observation of Earth’s oscillating inner core” by Wei Wang and John E. Vidale, 10 June 2022, Science Advances.
DOI: 10.1126/sciadv.abm9916
Earth Oscillates

the morphology of the dendrite as a stored memory that conditionally activates

The synaptic dendrite is changing into new memories when it changes shape through ltd and ltp. The changes however invariably are going to preserve some remnant or trace of the previously learned memories, lots of tiny structural changes on short time scales result in long histories over long periods of time. The aging morphology of dendrites will encode the traces of past memories even when new memories replace old memories.

I am the phase field, emitted by exit terminal, that becomes encoded inhibitory neurons that create the oscillating tonic brainwave patterns that unify cell assemblies to recurrent waves of expectation.

There is not necessarily anyone who is actually there in your head, there could be in theory, but the point I am making is that the observer, or the existence of the observer that says "I think therefore I am" or "Cogito Ergo Sum" could be just implied, without there actually being an observer. It could be just an observation, and it could be just the observation of an observation.

to be or not to be (a self) that is the question

Whether there is actually an observer or not is perhaps a question for the Buddha to answer, and actually I think he passed on answering that question definitively. So maybe it's up to the observer?

Neural Array Oscillating Projection Tomography

I am a phase field, the observer is just implied, there is no self. Or maybe there is a self, but how do you know the difference between an implied self (because there is an observation) and an actual self (an actual entity that is separate from the observation) or perhaps you want to argue that the self is the observation? or that it's just part of the observation?

The phase pattern of the mind is a 3D grid pattern, a pattern defined by frequencies with varying durations (magnitudes) in a 3D grid of cells (your brain)

So we can really say materially that the mind consists of information encoded in brainwaves & brain activity. It's a valid statement.

the mind as a virtual self

Our minds are virtualized substrate invariant information patterns, meaning that we are software, and while the human brain tissue is the only known home of minds like ours today it will not be the only home for our minds in the future. We are on track to being able to download copies of our minds into computer systems, to create backups of ourselves, to put our minds into robot bodies.

The memory that comes around comes around again if you want it. If you forget a cool memory, know that your memories oscillate and you might remember it again if you wait for it, and you might construct it into an even more awesome idea down the road.

Can we say that space time is magnitude is inversely proportional to frequency
What was that equation?
2 pi r squared? look up how to calculate gravity

trying to plot the per atom strength of gravity as the time dilation effect,
(then trying to consider how to multiply the time dilation effect when the density of atoms in a given volume increases)

It was the Inverse Square of Radius
So we need to use the Inverse Square of Radius to calculate the precise time dilation effect of an atom, to understand how one atom is changing the time dilation for a given area

but then we need to quantify how the density of atoms in some volume of space corresponds to the magnitude of time dilation from a given mass.

memory development without spiking

I realized that since AP wave duration is changed by the amount of potassium
that regular tonic oscillations will also affect the duration of the Action Potential Magnitude, during normal tonic oscillation, increasing or decreasing the changes of a phasic pulse from that group.

This potassium effect is a meso-scale effect to study at the cell assembly level or neural oscillating group level, or cortical column level or at larger scales, the effects might be very small at the individual neuron scale and hard to judge.

The effect glial cells have may include playing a role in increasing/decreasing ion gradients in addition to their role in channel configuration, and glial cell interaction is going to be part of changes to your tonic thinking patterns, so when caffeine, alcohol, or other drugs affect your thinking, the blood vessels, the glial cells, and the ion gradients, and the neurotransmitter production will all play a role in how your thinking shifts.

but since the releases come in 0, 1, 2, 3 vesicles that might be how the tonic phase is just 1

the tonic or periodic is going to reflect an interval of conscious awareness that contains empty expectation, it has no meaning but simply expects the same pattern as last time to happen again eventually and it reflects surprise physically when it doesn't (inhibited) happen, or when it does

so they way ap syn fires it sets the expectation rate for the inhibited neurons

so you have an oscillating expectation in the inhibited neurons

so the ap spike is the memory, the inhibited set expect, and display their expectation

the way tonic firing is changed by action potentials in excitatory firing is both like a photo taken of light and it sets an oscillating expectation timer for the same event happen again

tonic brain waves explained as the reason we see Tetris blocks with our eyes closed after playing the game Tetris for 5 hours.
this is why after playing Tetris for 5 hours you close your eyes and see tetris blocks in your eyelids, those are oscillating set expectations in your tonic wave patterns set by the action potentials that fired when you were playing tetris but optimizing your brain for that task the more you kept at it

the process of continually changing potassium levels that can release tonic firing also explains how tonic firing neurons can kick up phasic brain patterns now and then that are reflective of something you have been thinking about for a while

because multiple tonic oscillations are exerting the effects of collective information consideration on each other with each interval pf tonic firing

so your non activated thinking continues to oscillate at tonic frequencies as the oscillations consolidate the amount of potassium moves towards equilibrium overall or locally in places away from equilibrium (the brain has been described as a chaotic oscillator)

so even in a sensory deprivation tank your tonic waves imprinted with memories stretching back waves months years and decades continue to quietly oscillate kicking up new memories now and then as the work between two different oscillating arrays sometimes triggers enough potassium to create a phasic or high phasic spike

The activity of glial cells, in addition to assisting with LTP & LTD functions (via facilitating or eliminating synaptic relationships between neurons)

my new idea is that glial cells could be involved in distributing the production of sodium / and or potassium channels and the configurations of those channels, as well as increase or decrease ion gradients that shift the

Choices

I think decision making is fundamentally two things: 1 it's a bottom up threshold reaching process in the receptors & bodies of ALL cells, with the receptor configuration representing LTP. To confine decision making to simply a region of the brain like the PFC is bad science.

But what drives our choices is also
2. a top down process from the memories stored in our tonic brainwave patterns that are attractors driving our the completion of our past learned expectations so that our choices appear to have a logical continuity over long periods of time. That's why you do not impulsively respond to every advertisement.

My question to you is "Are you sure there is a self and that the existence of an observer isn't just implied by the rendered perspective in the phase field that represents reality in the mind of the organism?"

Tonic waves set our unconscious expectations allowing us to track the environment like a single sensor, the way a hive of fireflies would be a single sensor of expectation.

I can lose conscious track of the room while unconsciously keeping track of the room (especially parts of the room I am not facing) because tonic oscillating patterns maintain the shape, concept, features of the room in my unconscious expectations, they are just waiting for sensory updates to update those oscillatory patterns.

a0207z ctpr
Nov 13, 2011
(emotion)
I see the reality of no self

if you think hard, as a baby you have no sense of self, in fact you will not initially recognize your own reflection

just today I randomly sat in my chair, and wrote the words "is there a central character inside my brain that is doing the choosing and deciding? or are there only thoughts, predictions, and expectations that make it seem so...." before I could finish what I was writing it felt as ifmy body and mind just dropped off.

the body fell like a rag doll for a second, when my head lifted back up I realized the autonomic nervous system was still here "acting" my heart feels like a ball of glowing energy and warmth, I feel like I am part of my surroundings, its as if the whole universe is moving itself, bringing these people to have these funny lives, but its pretend, or its like pretend, its like the reality is pretending there was something else inside, pretending there was a soul or inner actor, in addition to what is just apparent.

the autonomic nervous system, the thoughts, the actions, the expectations, its all happening on automatic, the universe making herself

I had a dream of self and now that dream is gone ^_^ then I logged onto faceobok and started searching for people like me.

I am profoundly enlightened in this now present happening, as the present happening is suddenly all that is real, the rest including myself is this flickering character or song that seems so much weaker now in contrast to the present moment. Its like self became a shadow, and whats here came out of shadow to become way more relevant.

On pondering further it is as if my inner orientation between the present, and the character I had in my mind shifted or flipped on its back

the present becomes real, the character becomes unimportant

I know that I keep referring to myself, but it doesnt mean the same thing it used to, because internally my emotions are not tied to that notion, its just a reference point for social dialog, self is a tool for the social contract, but there is no personal self that is real to me now. The character is not me, there is no real self, no stuck actor with stuck opiniona and stuck mindset, its like freedom, swoosh, feeling release now, sudden release into the present :)

a0208z
Nov 5, 2013
(thalamus, oscillate, fourier) I think consciousness (binding of sensory and abstract data) is the building, decoding, and reconstruction of multi-dimensional waves like the gabor fourier wave transforms in non-linear loops (what's a nonlinear loop? haha). The vibration of persistent oscillation is a self aware hallucination because it's sensing waves even as it builds data from waves. The dual processing of building & sensing waves (fourier wave transforms for example) gives rise to interdimensional awareness on the canvas of holonomic dendritic arbors united by neuroplastic sequences of brain activity including rich clubs and thalamus activity.

A computer can assemble a gabor fourier transform, but the transform isn't being sensed by itself or by other gabor fourier transforms, the transform isn't sensing and being updated by what it is sensing.

The canvas of consciousness isn't just integrated information, it's the information in the structure of wave forms that are encoding and decoding themselves, meaning the wave forms are sensing themselves.

The computer integrates information with it's propositional rule based algorithms, the information itself is essentially counted by transisters, and then presented or decoded to the user.

It isn't self aware because it isn't creating sequences of wave patterns that are decoding and encoding themselves in non-linear loops

the interwining of conscious and unconscious is so pervasive its like a red & white candy cane, they are mutually causative, like a conscious result sets a new unconscious reflex, a conscious result of the new reflex sets a newer reflex, red white candy cane, one causes the other, and the other causes a new one

My first point is that there isn't a set time between an unconscious decision, and a conscious realization of that decision. It could be between milisecond, and 12 seconds, or maybe 33 years. Secondly the causality of consciousness does not have to be active in the present, it can be passive in the present but potentially still causative toward some future plan to take some action

or reaction, at a later date, location, or contigent circumstance. Consciousness can seem passive but as a physical effect it would be absurd to rule it as permanently outside the chain of cause and effect. Or perhaps you argue you can have a brain create a conscious effect that has no impact on the physical activity of the brain? Do you argue that neurons do not detect information, I mean pure non-physical massless, energyless, velocity free information like coincidences, patterns between moving things. If neurons detect coincidence, (they do) then with milisecond timing the nuances of whatever information your thinking is not exclusively passive, its being sensed by neurons, if its the specific information pattern, neurons will fire in specific sequences at specific frequencies. Information patterns cause neurons to fire, is your consciousness not information at least?

a0209z

May 29, 2018

Humans are metal robots in a valid sense.
https://medium.com/silicon-valley-global-news/breaking-news-humans-are-metal-robots-literally-a7bd78bb333d

Humans are metal robots in a valid sense.
Mankind via neuroscience, computational biology, computational neuroscience and deep learning neural networks has been and is now awakening to the overwhelming evidence that we are all mechanical robots.
Written by Micah Blumberg, Journalist, Researcher, Neurohacker at http://VRMA.io

Abstract: Your cells contain aqueous cations filled with metals like sodium, potassium, calcium, ie charged ions, that allow your nerve cells to generate and respond to both voltage and electromagnetic waves. Increasingly deep learning neural networks are starting to create patterns, like artificial grid cells, that are surprising researchers with their functional similarities to how the brain is thought to work. Conclusion: if one sits with this research long enough the natural conclusion is that humans are metal robots.

Point 1: Your cells are filled with a metals (in a liquid solution), ie ions, positively charged sodium ions Na+ and negatively charged potassium K+ ions and also calcium Ca++. These metals allow your cells to response to and generate not only voltage but also electromagnetism, example: brainwaves. Life, meaning biology, is computing the mind, and generating models of the world, to coordinate movement. Tags: Neuroscience , Robots , Drones , Self Aware Neural Networks , Computational Neuroscience , Deep Learning Artificial Intelligence

The Action Potential
webspace.ship.edu

The self aware neural network of your brain is predicting future video frames, future audio signals, predicting what you might touch, taste, smell, and these predictions resemble the patterns of the original incoming sensory signals.

What you are seeing right now is a video feed, in your brain, but I believe that it's actual computed volumetric rendered video, that your mind's neural network is simulating the same kind of signal processing that humans use for actual video, except that in addition to creating video your mind is also learning from the video stream that it is producing. This idea is based on an understanding of how a neural network can emulate a signal processor. Note that I didn't say anything about how the video would be distributed or assembled in the brain. I'm not suggesting a frame by frame video signal but rather a volumetric 3D video, like a hologram, but one in which any point can change at anytime independent of the concept of a video frame.

Point 2: See this paper: "A neural network trained to predict future video frames mimics critical properties of biological neuronal responses and perception"

By William Lotter, Gabriel Kreiman, David Cox (Submitted on 28 May 2018)

Abstract: "While deep neural networks take loose inspiration from neuroscience, it is an open question how seriously to take the analogies between artificial deep networks and biological neuronal systems. Interestingly, recent work has shown that deep convolutional neural networks (CNNs) trained on large-scale image recognition tasks can serve as strikingly good models for predicting the responses of neurons in visual cortex to visual stimuli, suggesting that analogies between artificial and biological neural networks may be more than superficial. However, while CNNs capture key properties of the average responses of cortical neurons, they fail to explain other properties of these neurons. For one, CNNs typically require large quantities of labeled input data for training. Our own brains, in contrast, rarely have access to this kind of supervision, so to the extent that representations are similar between CNNs and brains, this similarity must arise via different training paths. In addition, neurons in visual cortex produce complex time-varying responses even to static inputs, and they dynamically tune themselves to temporal regularities in the visual environment. We argue that these differences are clues to fundamental differences between the computations performed in the brain and in deep networks. To begin to close the gap, here we study the emergent properties of a previously-described recurrent generative network that is trained to predict future video frames in a self-supervised manner. Remarkably, the model is able to capture a wide variety of seemingly disparate phenomena observed in visual cortex, ranging from single unit response dynamics to complex perceptual motion illusions. These results suggest potentially deep connections between recurrent predictive neural network models and the brain, providing new leads that can enrich both fields."

Deep Neural Networks & Biological Neural Coding Comparisons, I would say that the following paper makes a bizarre leap in terms of not running the same sort of comparison with other kinds of neural network's that are not gradient descent based, but it is a reasonable argument I think

to say that we are better at recognizing common features of our environment that we have learned well and are used to compared to recognizing uncommon features of our environment.

"Efficient neural codes naturally emerge through gradient descent learning"
Abstract: "Animal sensory systems are more sensitive to common features in the environment than uncommon features. For example, small deviations from the more frequently encountered horizontal orientations can be more easily detected than small deviations from the less frequent diagonal ones. Here we find that artificial neural networks trained to recognize objects also have patterns of sensitivity that match the statistics of features in images. To interpret these findings, we show mathematically that learning with gradient descent in deep neural networks preferentially creates representations that are more sensitive to common features, a hallmark of efficient coding. This result suggests that efficient coding naturally emerges from gradient-like learning on natural stimuli."

[1805.10734] A neural network trained to predict future video frames mimics critical properties of…
Abstract: While deep neural networks take loose inspiration from neuroscience, it is an open question how seriously to…
arxiv.org

The metal ions in your cells separate over time in part as a result of proteins moving in response to external stimulous, an example would be proteins in your ganglia neurons flipping because they are being hit with photons in your eye, separation of ions occurs in part because of the exchange of ions via neurotransmitters transmitted between cells via synapses, separation occurs in part because of reactions to electro-magnetic brainwaves which may increase or decrease the electrical potential of a given location in the brain, changing the threshold for when a cell or dendrite may fire. When the positive and negative charges separate to a significant amount an action potential is triggered, either in the dendrite, or along the axon. Positive and negative ions are sent between cells, as neurotransmitters, changing the thresholds at which cells further down the line may fire. In addition, the synapses have a variety of other threshold mechanisms, and can for example become configured to only fire when certain conditions are met, such as when two or more signals (signals representing cells that fired their action potential) beneath them in a hierarchy are triggered within a configurable amount of time such as three miliseconds or two miliseconds, or one milisecond. The dynamics of cell firing and neural circuit firing is a much deeper topic than I haven't even touched the surface of everything involved.

This book by Peter Tse dives deep into how the neurons are coincidence detectors and how they may process signals.

The Neural Basis of Free Will: Criterial Causation (MIT Press)
A neuroscientific perspective on the mind-body problem that focuses on how the brain actually accomplishes mental…
www.amazon.com

Point 3: The brain is digital, its not analog, it processes discreet information like a computer. A recent paper changes the dominant paradigm of neuroscience for at least the past 50 years. See this paper: “Is Information in the Brain Represented in Continuous or Discrete Form?” “James Tee, Desmond P. Taylor

“(Submitted on 4 May 2018)

“The question of continuous-versus-discrete information representation in the brain is a fundamental yet unresolved physiological question. Historically, most analyses assume a continuous representation without considering the alternative possibility of a discrete representation. Our work explores the plausibility of both representations, and answers the question from a communications engineering perspective. Drawing on the well-established Shannon’s communications theory, we posit that information in the brain is represented in a discrete form. Using a computer simulation, we show that information cannot be communicated reliably between neurons using a continuous representation, due to the presence of noise; neural information has to be in a discrete form. In addition, we designed 3 (human) behavioral experiments on probability estimation and analyzed the data using a novel discrete (quantized) model of probability. Under a discrete model of probability, two distinct probabilities (say, 0.57 and 0.58) are treated indifferently. We found that data from all participants were better fit to discrete models than continuous ones. Furthermore, we re-analyzed the data from a published (human) behavioral study on intertemporal choice using a novel discrete (quantized) model of intertemporal choice. Under such a model, two distinct time delays (say, 16 days and 17 days) are treated indifferently. We found corroborating results, showing that data from all participants were better fit to discrete models than continuous ones. In summary, all results reported here support our discrete hypothesis of information representation in the brain, which signifies a major demarcation from the current understanding of the brain’s physiology.”

[1805.01631] Is Information in the Brain Represented in Continuous or Discrete Form?
Abstract: The question of continuous-versus-discrete information representation in the brain is a fundamental yet…
arxiv.org

Point 4: Research from DeepMind: Neural Networks spontaneously form something similar to Grid Cells to get really good at navigating 3D spatial environments.
Navigating with grid-like representations in artificial agents | DeepMind
In our fifth paper published in Nature, we developed an artificial agent to test the theory that grid cells support…
deepmind.com

Point 5: Neural Networks in the Neo Cortex may also mimic grid cells for spatial reasoning

Last winter Jeff Hawkins revealed new research which suggests that columns in the neocortex basically mimic grid cells, but to identify every object in our environment including it's features, it's physical properties, including it's present orientation in space relative to everything else. A single column of neurons is capable of modeling at least millions of patterns.

Jeff's MIT Talk: Have We Missed Half of What the Neocortex Does?
In Jeff Hawkins' MIT talk, he describes a theory that sensory regions of the neocortex process two inputs. One input is…
numenta.com

Point 6: In 2013 Stanford created a computer model to create a plausible explanation for how brain's can make a choice.

Stanford researchers surprised to find how neural circuits zero in on the specific information…
While eating lunch, you notice an insect buzzing around your plate. Its color and motion could both influence how you…
engineering.stanford.edu

Choices may also be made at the cellular level, an idea expounded upon in Peter Tse's book the Neural Basis of Freewill: Criterial Causation (linked earlier in the article). I think it's possible that every cell is making a choice in a sense, it's firing threshold may represent the information it must collect in order to make a decison, and it may be involved in setting the choice settings (or firing thresholds) for other cells above and below its place in the hierarchy of the cortex.

In closing: Consider the Dendrite as an advanced data structure, and consider that dendritic computation may have vast temporal and spatial memory capabilities for setting, presetting, and holding decision making information criteria based on a vast capability to respond in very complex ways to incoming signals by making very tiny changes to its structure, including changes to the hairs on the dendrite, that have a consequence of changing the ionic properties of the dendrite, with the ability to create it's own action potentials that can accumulate in cell firings at the axon level. Dendritic computation may be the key to the function of neural circuits. An idea I touched on in the Neural Lace Podcast a few times. Briefly in Episode 2 and to a greater extent in Episode 4

Humans are metal robots in a valid sense. Imagine that its like the tv show Westworld except every human is also a robot. This is partly why one day we can have AR VR plug directly into our brains (wirelessly) skipping the headset. (Like Sword Art Online or The Matrix)

Addressing criticism for my "Humans are metal robots in a valid sense" story:
https://medium.com/silicon-valley-global-news/addressing-criticism-for-my-humans-are-metal-robot-story-86f1c99d72b6

Addressing criticism for my "Humans are metal robots in a valid sense" story:

I made no claim that an electronic transistor experiences sensations. Going back to Peter Tse, neurons are coincidence detectors. Neurons detect information as coincidence patterns. The bit of the mind is a coincidence.

A bit of information is the basic unit of data https://en.m.wikipedia.org/wiki/Bit

The neural network builds concepts like an artificial neural network but one that is more evolved (by the age of life on this planet.) Perception is a rendered concept. Rendered by the brain to other parts of the brain in a fractal of feedback loops. This part is a reference to deepdream https://en.m.wikipedia.org/wiki/DeepDream

I understand that neurotransmitters flow between chemical synapses. I am arguing that they cause a change in the placement of charged ions which affects when and where neurons will fire.

Note: Calcium, potassium, and sodium ions are metals regardless of whether they are dissolved in aqueous cations. Look at a periodic table to see for yourself.

Note: I never said it was as simple as a neuron firing or not firing. I said coincidence detection was the basis of a bit, but there is a lot of computation that can happen below the threshold of a neuron firing.

Note: See the article I linked in the original article I referenced where they show how the brain processes information in discreet steps. Relevant to a comment someone made that [time isn't digital in the brain]. Someone said [Sampling frequency will change the bit-stream] I agree: Exhibit psychedelic medication research and deep-dream.

I didn't say a neural firing was equal to 1 bit exactly. I said that coincidence detection serves as the basis of a bit. Thats different. I agree with the idea that neural firing could be more or less than 1 bit. Its not a simple summation to 1 bit like they teach in Intro to Computational Neuroscience.

Note: A bitcoin is the basis of a bitcoin but that doesn't mean all transactions will be in amounts of 1 bitcoin or greater. Folks can trade in amounts like .00034 bitcoin if they want. Also note that there are sub-threshold events that could count as coincidence detection (events that do not cause a neuron to fire). An example might be when a action potential is triggered in the dendrite (that might backpropogate) https://en.m.wikipedia.org/wiki/Neural_backpropagation

Note: I am not suggesting that a bitcoin is equal to a bit, and I certainly didn't say that it was. Whether a particular neuron firing at a particular time represents 1 bit, or 1000 bits, .0005 bits my statement that coincidence detection can serve as the basis of a unit of information in the brain is valid.

Note: My central thesis isn't that the brain is digital. The fact that the brain is discrete verses continuous is a subtopic established by a paper that I linked in the original article.

This address came about because of a post on social media where I said:

"I say that there is nothing that we can teach people that machines cannot also learn. You may ask why do I think machines can learn everything that humanity holds dear including feelings and art? It's simple really, all knowledge, feelings, emotions, insights and intuitions can be broken down into tempo-spatial patterns that can processed by a brain and thus by a computer."

Someone said [Machines can also be spoofed easily, as Microsoft's Tai debacle showed, which is fairly easy to do when large groups of outsiders hack a system. AI can learn fast, but teams much faster and in unexpected ways.]

I replied "that's a true statement but the fast pace of AI development will soon lead to machines that are much harder to trick or spoof. In less than two decades and maybe sooner it will be easier to fool a community of the smartest humans than it will be to spoof the best AI."

I was also asked if I was a Functionalist I said

"I'm not a Functionalist exactly but close. The state of knowledge is going be directly related to its function. The parameters of the frequency and spatial mapping of information in a mind are going to effect the functionality of it, and that includes the internal functions of internal representations."

and

"the difference is that I believe that a certain class of substrate is required to achieve a certain kind of mind, like the human mind, but that class of substrate could be made out of different materials, so I'm not believing that the functionality of the human mind can be achieved without a certain class of substrate that accomplishes certain objectives."

Someone mention a Max Tegmark paper from 2014 https://arxiv.org/abs/1401.1219 and I replied

"I know that paper, I call it special sauce theory, and I side with folks like Jeff Hawkins who think there is no special sauce, no magical "emergence" phenomena (like gas turning to water) ha. Nothing special that hasn't been detected already. Maybe later on this author will point to electromagnetism in the brain and then say there it is but I think the problem is that information doesn't have any meaning in it without a decoder to decode that information, otherwise it's just a bumps on a record player."

Someone asked if I would try to reduce life to its components such as ones and zeros or particles.

I replied “whether life can be described with one’s and zeros or with particles is just one view point out of many, that one view point would not be the whole story of life, just a small part of the story”

and

“I think from a valid point of view feelings are just patterns in space and time, the pattern could be analyzed and someday replicated in a machine that attempts to mimick the functions of biology. At the same time, I think I can appreciate that some people don’t need those extra details, and the feelings alone are what matters to them.”

In short I believe that if you combine a digital signal processor with a deep learning neural network, a three dimensional point cloud and a fractal of feedback loops you get the human mind or a self aware network.

My central thesis^
I would say that I think there are still some things that people do not know about the brain, but we know a lot more about the brain than most people think. People perceive things differently, emotions don’t follow logical patterns, but they are patterns like sunrises and sunsets, some with highs and lows, beginnings and ends, feelings that have strange shapes in space and time.

a0210z

October 9, 2017

https://medium.com/silicon-valley-global-news/the-neural-lace-journal-talk-show-a-compilation-of-articles-and-links-ae3fbb0d5d5a

The following was written in partly in 2017 and partly in the intervening years between 2012 and 2017 and so it does not represent my current up to date analysis.
I believe we have never been closer to hacking into the VR system of the brain. So we can create our own reality at the push of a button.

Have you ever wondered how Neural lace might work? I have some amazing guests talking about it on my podcast, give it a listen if you have time today.

In the 4th episode of the Neural Lace Podcast, I talk to Andre Watson, the CEO of Ligandal, a genetic nano-medicine company developing personalized gene therapies. goo.gl/cgCNwX Watson and I take a deeper dive into the synapse physiology and molecular biological basis of consciousness.

How much do we really need to understand and observe to effectively create neural lace? Andre presents his argument for the biological basis of consciousness.

My new podcast is being recommended by high level science folks to other high level science folks, people with letters like DR, PHD, MD, before or after their names! My podcast is being listened to by the executives of major tech companies. I am getting great feedback on the new podcast, and it's getting global attention, people with five star professional backgrounds from all over the world are writing to me for example from countries like India, Germany, and Japan asking for more things they can read about the topic of Neural Lace related to the contents of my podcast. It's truly a podcast for the Global Silicon Valley community! The frequency at which new people are reaching out to me to talk, and to listen to the podcast feels very special to me, like a count down sequence to lift off. 10, 9, 8, ….

The Neural Lace Podcast: Four Episodes have now been published.
The Neural Lace Podcast Playlist Summary
medium.com

The Neural Lace Podcast Playlist Summary
The Neural Lace Talks is a podcast about Science and Technology. I am your host, a journalist who has been a student of…
medium.com

The Neural Lace Podcast #4 Guest: Andre Watson
The Neural Lace Talks Host: Micah Blumberg Editor: Adam Alonzi
medium.com

The Neural Lace Podcast #3 Guest: Eric Matzner
Listen to The Neural Lace Podcast: Episode 3 Realizing Neural Lace here
https://youtu.be/_yKjtTVoVlU
medium.com

Neural Lace: AR / VR no glasses
Neural Lace is Augmented Reality and Virtual Reality without glasses. The Neural Lace Podcast is about cutting edge…
medium.com

I recently have had to think hard about how much GPU power it might take to read the human mind. The fact that I have a meeting today with a major corporation in which the question will come up is part of why I have been thinking about it. In all honesty I am not at all certain at what the answer should be.

What do you think the hard number is? How much AI am I going to need to learn to read brainwaves as easily as reading a newspaper?

Someone's answer to this was about the raw complexity of the human brain with all it's synapses and dentrites and connections.

Another person said that we will need quantum computing to save the day, because it's just too complex otherwise.

Yet for me neither person really attempted even to answer my question. How much GPU power will be necessary to just barely crack the code of the human mind, we don't need to brute force our way into every secret (Yet) we just need to stick a crow bar in the doors of perception long enough to take a peak. Then the computer can help model the rest in time.

My anticipation is that the depth of the sophistication of the information passing through the nervous will be incredibly complex, but we should be able to build a working model of how our minds work with the research I have planned.

I'm very interested to study how a small tiny portion of brain activity corresponds to activity in other areas, such as in the environment of the individual being studied.

So in a sense I need AI to study both the person, with a new brain computer interface I am designing, and I need it to study the environment of the person and that person's reactions to that environment, their heart beat, their eye movement.

There are two directions for the new brain computer interface.

There are a number of new chips coming to the market, we may or may not gain approval to implant some of these chips into the nostrils of human beings for basic research into the properties of self-awareness which could not be conducted on an animal because in this study we will need the self reflection of the person involved to give us feedback on a few small parts of the experiment.

Soon after basic research is over however we will look at the options for the wireless reading of signals from the Thalamus region, and the wireless transmission of signals back into that area.

Regardless of how that particular direction of the research goes there will be numerous other insights from this extremely detailed study of the human nervous system with it's environment.

What I can say is that we will be able to make major advances in medical research.

We will begin to map the information channels like never before, using a computer to model the network of information throughout the nervous system, from the fingers, to the toes to the brain to the eyes, to voice, to the ears. To how we listen and see, to understanding how the metaphors of smell are encoded digitally in networks of neurons.

So we are going to begin to listen in, on the complex information patterns of the human nervous system, I am like taking a Stethoscope to your brain, to see what patterns are inside it that the computer can understand and translate for us. That is the plan.

If you can help me answer some of these hard questions, if you are stuck up late nights reading the latest paper in computational biology and also totally alert to all the advances in AI coming out of Google via DeepMind Technologies, then I want to talk to you.

I think it takes people who are students of both biology and computer science to understand where the world is going to go next.

If you are interested in discussing the science and technology that might go into building next generation brain computer interfaces please connected with me in these groups:

a0211z
(thalamus, perception, oscillate, cortex) imagine a skit

where one guy

so the alterate states of mind with cannibus would be specific oscillator changes,

could you scan part of the oscillating mind
and at the oscillation level discern a decodable pattern? What if each component of 1 oscillation was like a 3D pixel in space lighting up?

The pixels that light up are the pixels that represent 1 pattern, and the entire cube that isn't lit up is collectively listening to the pattern that the other cubes light up, and so the brain is listening to its own patterns

it would be like the holodeck is listening to itself

I'm experiencing mind alterates with cannibus as change is the large scale rotation of oscillations reacting to changes with other oscillations with oscillations pushing on each other but being unable to merge, like seat water colliding with freshwater and there being a separate

of colors where you have a yellow sea up against a green sea, but they do not appear to be mixing.
So you have the data from one group oscillation maintaining a certain area that has a certain maximum sides and whos borders are defined by other oscillations. Because the direction of the oscillations change depending on which neurons have fired and that is I'

each pixel is like an action potential, from the Soma, but the small action potentials could also, they provide information from another sensory modality, because you see the brain is a 3D neural network where firing pixels are heard by listening pixels. The whole matrix becomes the input for the rest of the matrix, so that each neuron is learning its firing sequence, learning to predict its own explosive moments, because of the physical forces that accompany them. Neurons have like siezemeic activity that they are detecting, evoking a specific pattern in consciousness, which is the equivalent of saying evoking the whole pattern in consciousness.

a 4th dimensional pathway
a three dimensional grid like the borg cube, 13 functional layers (from Numenta)

each node takes its turn firing a radio frequency in a sequence as surges pass into them,

the way microtubules eject and refill themselves with neurotransmitters almost like a sort of cloud with a hydrolic liquid that is pushing between two points, as if winding a magnetic motor

as if all the signals large and small that the neuron gets are widing a magnetic motor, and the current arrangement is the pattern that it makes when it fires, that becomes part of the global pattern

so now we have neurons that flash representing a red color that other neurons have the ability to perceive as red, because each one has a holodeck with a huge number of learned patterns, they can relate to it in a physical way to mark their own prediction marker to thrack how and when they are going to fire, in other words they study all the nearby neurons and learn their patterns
when all of the brain does this simultaneously we are conscious and woke and awake.

This is like cutting a worm in half, the right way, and you see it become two worms,

cutting the corpus collosum means that one person becomes two persons

like two different brains sharing the same skull
It would be interesting to know if the two brains could begin to get deep awareness of each other as two distinct personalities, because of the specializations that each has in the form of neural pattern presents that is the shape of an oscillation as definited by which of its 3D grid of neurons firing in this frame while the rest listened, and

right now I just imagined that the brain was sticking its voice into my brain remotely, by telling which of my neurons to fire and when, thuse modifying my perception of reality

this would enable us to create AR and VR experiences through direct brain stimulation

if something else can manipulate the human you could manipulate their reality

with layers I could build a trapezoid around the player

and I could build layers to entrap in inside a cube, and then all I have to do is send a frame of video to each layer

basicallly its like streaming 6 different high resolution youtube streams representing each side of that perspective from that cube, each head movement results in a corresponding movement on that other server,

so that one can have a six sided VR experience that is streamed from a cloud gpu

hacking artificial neurology

if we can control just the major input points, to the Neo Cortex, such as at the thalamus, we might change what is broadcast to the rest of the units, and thus change

This would mean that DMT works because its accelerating pattern changes, power oscillation changes and more activity than usual oscillations in the delta section

How to change yourself, how to change your mind, your thoughts your energy your motivation.

Imagine that you can become aware of how you are doing what you do and that means you can control it better,

If you focus on what you want, instead of what is being presented to you, you are switching from an automatic position to an intentional position.

It's a matter of thinking about the patterns that you want in order to create the corresponding actions that achieve them.

a0212z
(oscillat) imagining the reactions to my book

one was I'm just a bunch of oscillations in effect, but at the same time I don't really exist, there is no real self, just these patterns that exist for a meat & metal robot,

"It's a meat & metal robot you say" yes you are that

a vibrating soliton mechanical wave + ion tracking dendrititic & soma computation

a0213z

In order for the Action and Perception Cycle to work the patterns between the corresponding areas (like what you see, hear, and touch) have to be connected and simultaneous (they have to have a temporal & spatial connection in the brain I meant).
synapses form new connections during learning between activated brain cells, cells that spike within moments of each other grow synaptic connections between one another

a0213z.clusters
"New brain connections form in clusters during learning"
"The clustering of synapses may serve to magnify the strength of the connections."

I think I saved this article to make the point that in a harmonic oscillating field oscillations for clusters, small oscillations attract other small oscillations, forming clusters, that form bigger attractors, that absorb smaller oscillations, that get larger, and eventually you get a lot of synchronous firing, because clustered oscillations are synchronized oscillations. So this article is just an interesting parallel.

https://news.ucsc.edu/2012/02/brain-connections.html#:~:text=The%20formation%20of%20%22dendritic%20spines,motor%20memories%20and%20muscle%20movement.

"Texture Coding In Higher Order Somatosensory Cortices"
https://www.biorxiv.org/content/10.1101/2022.08.19.504511v1

"Effective sound localization coding by noisy populations of mouse inferior colliculus neurons revealed by fast volumetric imaging"
https://www.biorxiv.org/content/10.1101/2022.08.19.504510v1

"Researchers track structural changes during formation of new memories
https://news.ucsc.edu/2012/02/brain-connections.html

Note oscillations also cluster naturally.

Oscillatory phase coupling coordinates anatomically dispersed functional cell assemblies
https://www.pnas.org/doi/10.1073/pnas.1008306107

Oscillatory coupling has been documented in the hippocampal pyramidal cells and interneurons in Rats in 1999
"Oscillatory coupling of hippocampal pyramidal cells and interneurons in the behaving Rat"
https://pubmed.ncbi.nlm.nih.gov/9870957/

Dynamic coupling of oscillatory neural activity and its roles in visual attention
https://www.sciencedirect.com/science/article/pii/S0166223622000157

Equilibration and oscillations in Becker-Doering clustering models
https://sites.duke.edu/dkucmcs/equilibration-and-oscillations-in-becker-doering-clustering-models/

Electric oscillation and coupling of chromatin regulate chromosome packaging and transcription in eukaryotic cells
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3472328/

Simply put the rate or frequency/magnitude of oscillations is stimulating growth and the direction of growth towards oscillations that have a matching frequency/magnitude, because at that interval of time, it required less energy for particles to move in that direction OR spacetime itself was moving faster in that direction (because space was heated up between the pair of frequency/magnitude matching oscillations) (insert here something like the free energy principle or law of energy conservation or Feynman's Path Integral, or extropy, or all 4) and what you get explains the clustering of oscillations, LTP long term memory, memory formation, association, the direction of synaptic growth, and the opposite of sync (the splay state) has the reverse effect, like the 'virtual entity' mentioned elsewhere in my notes.

A phase shift or a firing frequency change.
The synaptic events can be thought of as oscillators sending a knock, a knock that nudges the oscillations of other oscillators plus or minus in their own phase pattern.

Study shows new brain connections form rapidly during motor learning
"As mice learned a new task, repeated imaging of the same neurons over one-day intervals showed remodeling of synapses, with new branches (dendritic spines) forming and others eliminated during training. Image credit: Xu et al." https://news.ucsc.edu/2009/11/3413.html

"These results indicate that distal
tuft depolarization is required for the behaviourally evoked dendritic activity and that this depolarization is provided by vM1 input to L1. Thus, it seems that distal dendritic plateau potentials are responsible for producing a nonlinear dendritic integration of coordinated sensory and motor information in layer 5 pyramidal neurons during active sensing"

In this situation the tip of the dendrite, called the distal tuft, it had its own depolarization event, this was in the first layer of the mouses motor cortex which is called vM1, and then that connects to L1

This next article is about synapse formation between cells
"Experience-dependent structural plasticity targets dynamic filopodia in regulating dendritic maturation and synaptogenesis"
"NMDA receptor (NMDAR) mediated synaptic activity promotes dendritic filopodia formation"

"microtubules in the dendrites were more dynamic"
https://www.whitman.edu/academics/majors-and-minors/biology/team-dendrite/research/the-role-of-the-cytoskeleton-in-dendritic-development

r1 AFAIK all of these have been downloaded to the chromebook

Synaptotagmin-7 Enhances Facilitation of Cav2.1 Calcium Channels
get https://www.eneuro.org/content/9/3/ENEURO.0081-22.2022

More confirmation this morning that my NAPOT theory is correct! New connections to existing research found! In a nut shell I hadn't focused enough on calcium channels or pyramidal cells. In the large pyramidal cell the Apical Dendrite is the Exit Terminal
https://en.m.wikipedia.org/wiki/Apical_dendrite

Review
Synaptic Connections between Layer 5B Pyramidal Neurons in Mouse Somatosensory Cortex Are Independent of Apical Dendrite Bundling
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6673216/

Projection Neuron Circuits Resolved Using Correlative Array Tomography
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3080615/

coincidence pyramidal tuned dendrite pattern
https://nba.uth.tmc.edu/homepage/cnjclub/2003fall/Schaefer_2003.pdf

Physiology of Layer 5 Pyramidal Neurons in Mouse Primary Visual Cortex: Coincidence Detection through Bursting
https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1004090

sub cell org of connections
https://asset-pdf.scinapse.io/prod/1991444801/1991444801.pdf

coincidence detect between basal & apical
https://www.researchgate.net/figure/Coincidence-detection-between-basal-and-apical-tuft-inputs-a-100-tuft-and-175-basal_fig5_273463321

2021 Neurogrid simulates cortical cell-types, active dendrites, and top-down attention
https://iopscience.iop.org/article/10.1088/2634-4386/ac0a5a

Synaptic Potentiation at Basal and Apical Dendrites of Hippocampal Pyramidal Neurons Involves Activation of a Distinct Set of Extracellular and Intracellular Molecular Cues

https://academic.oup.com/cercor/article/29/1/283/4685972

add this to the protein oscillatory tomography section
"Multivalent interactions between molecular components involved in fast endophilin mediated endocytosis drive protein phase separation"
https://www.nature.com/articles/s41467-022-32529-0

Thalamic Input to Distal Apical Dendrites in Neocortical Layer 1 Is Massive and Highly Convergent
https://academic.oup.com/cercor/article/19/10/2380/600173

From perception to conception: how meaningful objects are processed over time
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3619663/

a0214z

Mar 7, 2021

https://medium.com/silicon-valley-global-news/webar-wearable-digital-fashion-nft-dnn-shape-completion-dnn-animations-gan-synthesis-sensors-39ff447fef04

WebAR Wearable Digital Fashion NFT, Bio-Sensors, 3D DNN Shape Completion, Animations, Gan Synthesis
We interviewed Emma-Jane MacKinnon-Lee the CEO of Digitalax for Part 2 of our series, and this time we were joined by Anina Net the CEO and founder of 360Fashion Network, and Cecile Tamura who is President and CEO at Okasaki Tech Holdings Corp in addition to being regular contributor to Silicon Valley Global News.
Digitalax X SVGN.io News X Anina Net. Watch the interview here:

You can learn more about Anina here https://en.wikipedia.org/wiki/Anina_(model)
The Meta Jacket
Worn by model influencer and co-play artist Shirleen creates a window allowing us to see into the future of Augmented Reality with Digital Fashion and Fashion Tech.

The Meta Jacket, created by Artifact Studios (rtfktstudio's first Digital Fashion Jacket), as worn by model, influencer, and cosplayer Shirleen (aka richchocolit on instagram) is a vision of our native digital future.

"The METAJACKET is RTFKT's first Digital Fashion Jacket. Dropping Exclusively on the DIGITALAX Marketplace."

The Meta Jacket is a leading example of Fashion Designers selling Digital Fashion using NFT blockchain technology, to validate it's uniqueness, so customers can prove they own the original and not a copy, and this involves Ethereum smart contracts written with the Mona NFT token.

The METAJACKET | RTFKT | Skinned by VII | LIVE February 18th 8pm UTC
The METAJACKET is RTFKT's first Digital Fashion Jacket. Dropping Exclusively on the DIGITALAX Marketplace.
digitalax.medium.com

This Meta Jacket video was created in post production, but the reality is that in the near future all of us will be able to wear Digital Fashion in AR and VR in real time.

Deep Neural Networks in Fashion Tech
Wearing Digital Fashion in AR and VR becomes possible in part because of technologies 3D deep neural networks which are being used for things like Real Time Pose Prediction, eye tracking, hand & finger tracking, holistic body & environment tracking, and most importantly 3D semantic segmentation.

Mediapipe Holistic
Mediapipe Holistic
Mediapipe is an example of an application made with Deep Neural Network technology (tensorflow) that can add facetracking, body pose tracking, hand tracking, object tracking, and in the future new features like 3D semantic segmentation, and 3D reconstruction of scenes, and it runs from a web browser. It runs with WebAR and WebVR apps built with the WebXR api.

Holistic
Live perception of simultaneous human pose, face landmarks, and hand tracking in real-time on mobile devices can enable…
google.github.io

MediaPipe Holistic - Simultaneous Face, Hand and Pose Prediction, on Device
Posted by Ivan Grishchenko and Valentin Bazarevsky, Research Engineers, Google Research Real-time, simultaneous…
ai.googleblog.com

Your future designer glasses will have augmented reality built into them thanks to technologies such as MediaPipe, but also Tensorflow 3D, Pytorch3D and other neural networks dedicated to 3D Semantic Segmentation. The computer will be able to apply Digital Fashion to yourself, other people, and to everything in the world.

PyTorch3D · A library for deep learning with 3D data
A library for deep learning with 3D data
A library for deep learning with 3D datapytorch3d.org

Emma-Jane writes this about the role she envisions for Digitalax

“DIGITALAX is a comprehensive umbrella of projects all attacking the same core and fundamental problems, and each project has its clear role to play. The fundamental point is that we take a modular, component approach, just like all of the best software projects on the internet today. What this allows for is considerate attention to each independent area of concern while still benefiting from a network flow of value generation between them. Another way of understanding this is that it is a graph model. We are ecosystem builders. Some people in prominent positions and their followers do not believe that such a thing is possible. However, I would kindly suggest that they visit my homeland of Australia and check out the Great Barrier Reef. Keystone species in ecosystem building environments are very real and have been applied to tremendous success in business time and time again.” — Emma-Jane, CEO of Digitalax

Digitalax is bringing together not only all of these technologies with DASH (which is written about in more detail later in the article), but also with the Artists, the Game Designers, Fashion Designers, the VR AR application engineers, and the Player-creators so everyone can work and play together.

This is why I say Emma-Jane is at the center of this technology and industry convergence in a sense.

There are astonishing possibilities that can be realized with the convergence of technologies such as 3D Deep Neural Networks, WebAR & WebXR, Digital Fashion & Art, NFT, and all the new sensors being integrated into our devices, some of which include brain computer interface sensors.

Our devices, phones, watches, VR AR headsets will have the capability to recognize people, recognize breathing, heart beats, predict intentions, predict emotions, detect your medical conditions, identify animals, cars, and objects in real time, and render Digital Fashion clothing in the real world via Augmented Reality websites (or WebAR), with the physics of the digital materials you are wearing to reacting appropriate to your environment, such as making digital clothing fit you correctly, and making it deform correctly when you sit down.

DNN Deep Neural Network Animations: Neural State Machine
To see an example of 3D Fashion deforming (or self modifying its shape in reaction to the environment, so that it moves correctly) we can look at a video from ACM Siggraph in 2019 where Adobe demonstrated a Neural State Machine for Characters running in Unity with Tensorflow.

In this example imagine that everything the character is doing is what your Digital Fashion will be doing, in terms of the clothing modifying its animations to match whatever situation it encounters.

That means that whenever the character/clothing encounters a new object it responds to the environment in a way that makes sense, a neural network is used to animate the character in real time, so that the character can adapt the variation in shape and type of an object.

Animating characters is a difficult task when it comes to interacting with objects and the environment. What if we used computer brains instead? In this research, we present the Neural State Machine, a data-driven deep learning framework that can handle such animations. The system is able to learn character-scene interactions from motion capture data, and produces high-quality animations from simple control commands. The framework can be used for creating natural animations in games and films, and is the first of such frameworks to handle scene interaction tasks for data-driven character animation. The research is implemented in Unity and TensorFlow, and published under the ACM Transactions on Graphics / SIGGRAPH Asia 2019. This idea explains how your Digital fashion clothing, in place of this character, will respond correctly to your real environment depending on what you interact with. If you are in a windy environment, your digital clothing will animate with accurate physics for example. In 2019 this was inside a game, in the coming years this technology will be in the world with us.

Technology like the Neural State Machine will be able to apply to the real world in part because we will have pixel perfect 3D models of the world that our devices will capture at 90 to 120fps thanks in part to technologies like lidar rgb fusion algorithms that are for example included in the Varjo XR-3 Mixed Reality headset.

Varjo (pronounced var-yo) is based in Helsinki and is creating the world's most advanced VR/XR hardware and software for industrial use, Varjo XR-3 Mixed Reality headset does volumetric capture turning the world into a cinematic quality 3D model in real time, thanks to its integration of a lidar RGB fusion neural network.

Here is a description from Urho Konttori, Co-Founder and Chief Technology Officer of Varjo: "Varjo's XR-3 and VR-3 headsets are not only making photorealistic immersive applications more widely accessible than ever, they are also accelerating the spatial computing revolution in the workplace overall. Thanks to a lower price point, coupled with the absolute best technology available, such as human-eye resolution at over 70 pixels per degree and LiDAR for seamless depth awareness, these headsets unlock an entirely new set of experiences where users can no longer tell the difference between what is real and what is not. This is an essential factor for driving broader professional adoption and seamlessly integrating XR technologies into users' daily workflows."

Varjo, with XR-3, has made the first fusion algorithm on top of lidar with video pass through.

Varjo's fusion algorithm is combining volumetric capture (lidar) with video, with Nvidia's deep learning optical flow…
medium.com

As of March 4th, 2021 Varjo's Next Generation VR-3 and XR-3 Headsets are now shipping worldwide. Companies can purchase the Varjo VR-3 and XR-3 at www.varjo.com

I think the Varjo headset's volumetric capture and lidar RGB fusion software shows us what our future phones and other devices will someday be capable of with lidar RGB fusion, and 3D Deep Neural Networks for Shape Completion, Semantic Segmentation, Gan Synthesis, and Interpolation Rendering.

OpenAI, GP3 Dall-E, Microsoft Mesh, Gan Synthesis, Interpolation, and Shape Completion.
On January 5th, 2021 OpenAI revealed DALL-E a version of GP3 which is trained to generate images from text descriptions. DALL-E builds on CLIP which is a sister GP3 neural network that is focused on multi-modal image & text recognition. CLIP for example learned images of chairs and the semantic concepts of a chair in language, and at the same time it learned images of avocados, and the semantic concepts of avocados in language. So that with that information Dall-E could be asked to create an Avocado Chair, and as you can see in the picture belong it did so.

This immediately reminded me of the concepts of GAN Synthesis and 3D model interpolation that I had seen in a talk in San Francisco called "Deep Learning for "Exotic" Data Like 3D Meshes and Point-Clouds" presented by Or Litani. In this talk you can see in the images below concepts of 3D Semantic Segmentation neural networks being used for Shape Completion and even a slide for turning a 2D photograph into a 3D model.

Or Litany
Or Litany orlitany at gmail dot com I am a Research Scientist at NVIDIA. Before that I was a postdoc at Stanford…
orlitany.github.io

Read a paper about Shape Completion here:
http://proceedings.mlr.press/v80/achlioptas18a/achlioptas18a.pdf

A slide from "Deep Learning for "Exotic" Data Like 3D Meshes and Point-Clouds" presented by Or Litani

A slide from “Deep Learning for “Exotic” Data Like 3D Meshes and Point-Clouds” presented by Or Litani
Using 3D Semantic Segmentation for Shape Completion means we can eventually turn the incomplete point cloud based representations of people in Microsoft’s Mesh into complete & accurate live models of people.

Deep Learning Shape Completion which is from 3D Semantic Segmentation, means that your volumetric video avatar, in Microsoft Mesh, will eventually be pixel perfect, while Gan Synthesis, Interpolation, and the Neural State machine mean you will be able to wear your Digital Fashion clothing during your live meetings, on your live volumetric video avatar.

Introducing Microsoft Mesh | Here can be anywhere.
Microsoft Mesh enables presence and shared experiences from anywhere - on any device - through mixed reality…
www.microsoft.com

These deep learning technologies also means that you will be able to (in the near future) make your headset invisible so that other people see just your face as if you were not wearing the Hololens.

It’s amazing to think about how far we have come.

A slide of history, 3D Deep Neural Networks in 2007, (aka 3D Object/Semantic Segmentation)

2009 Darpa Lager was already demonstrating semantic segmentation on 3D objects with self-driving vehicles.
A recent talk from Yann LeCun dived into the history of Deep Learning, in the slide called ‘3D image segmentation for “connectomics”’ it goes to show us that 3D Neural Networks (3D ConvNet) was already a thing in 2007 before the wider world discovered that Deep Learning was cool.

Watch Yann LeCun’s talk here, for a great window into the history of Deep learning as told from someone who was a core contributor to that history (Yann LeCun), thanks to Cecile Tamura, President and CEO at Okasaki Tech Holdings Corp, for sharing it.

A recent talk from Yann LeCun dived into the history of Deep Learning
To summarize this section, with 3D semantic segmentation, the computer learns the 3D structure of what it is presented with down to the individual pixels or points that belong to that object, allowing the computer to complete shapes when presented with a partial object. It can

deform meshes to make animations that look physically accurate and react to other objects both real and digital. It can interpolate or imagine new 3D models that are somewhere between previously learned models, and also with Gan Synthesis it can create new 3D model structures that are hybrid structures such as with the Avocado Chair example mentioned elsewhere in this article.

The Scan Truck
At first The Scan Truck might remind you of the Mixed Reality Capture studios at Microsoft, because they both have a room with cameras pointed at you from every angle, but its very different.

Bring life to mixed reality at Mixed Reality Capture Studios
If you've been on a video shoot, our capture process will feel familiar. We offer guidance when directing your…
www.microsoft.com

I wanted to include this story about The Scan Truck, because I think it is an excellent demonstration of what is possible with advances in 3D scanning technologies, in terms of creating photo realistic avatars.

I experienced Scan Truck's hyper realistic digital avatar in virtual reality at Siggraph in 2019, looking at me, and tracking me with eye contact, head movement & body movement, while he was talking, and I was stunned by how good it was. I did not sense the uncanny valley affect. Thanks in part to the Unreal Engine by Epic Games.

Hyper Realistic Digital Avatar — The Scan Truck
Here's a glimpse of what it takes to create a digital double! We've scanned a library of over 130 facial pdoses that…
www.thescantruck.com

The Scan Truck approach, that you can see in the video, involves using an array of cameras to capture high resolution images of a person from every angle, to turn that into a 3D avatar, and then to record that person's facial expressions with a camera mounted in front of that person's face. The motion capture is mapped to the high resolution model resulting in an incredible leap forward for volumetric characters.

What's special about The Scan Truck approach in my opinion is that it is using a 3D photogrammetry scan for the body, to create a high resolution model, and then they are just updating parts of that 3D scan, such as the face, with motion capture, so it's much cheaper than the Volumetric Capture studios at Microsoft.

See this paper from faceobok Reality Labs published in March 2021 called Mixture of Volumetric Primitives for Efficient Neural Rendering for what I think is a similar concept. “Mixture of Volumetric Primitives (MVP), a representation for rendering dynamic 3D content that combines the completeness of volumetric representations with the efficiency of primitive-based rendering, e.g., point-based or mesh-based methods.” https://arxiv.org/pdf/2103.01954.pdf

In summary your phone, VR headset, AR headset, (and perhaps your smart watch) will someday eventually replace the entire Microsoft’s Mixed Reality Capture studio, with the ability to not only capture the highest resolution 3D models, with lidar RGB fusion algorithms, but to also complete them with Neural Network Shape Completion, so they are pixel perfect, and compress them with technologies like the Fourier projection slice theorem and the DASH File Format Specification and File Intercommunication Architecture from Emma-Jane at Digitalax.

I had additional questions about Digitalax’s technology and one of the things Emma-Jane wrote in reply to me was this about Dash.

“I must say that this part is also the area with unbounded potential to greatly enhance and transform everything I spoke about above, as well as how we communicate, connect and create. DASH is a file format built for the metaverse and beyond. It is solving information transfer and interoperability the right way. It is not about optimizing on what has already failed. DASH is embedding the application layer directly into the file layer through elegant usage of some of the most beautiful math ever recorded by humanity. The whole creator, player, developer economy will change through this as they will be able to seamlessly transfer 3D/4D information through different graphic and digital economy environments with consideration for creative control. DASH also establishes business model innovation and exemplifies the power of open source and community driven collaboration, as we embed community incentive models into the upgradeability of the DASH Transformation Set.” — Emma-Jane, CEO of Digitalax

DIGITALAX
DIGITALAX is the first dedicated Digital-Only Fashion Auction Exchange Platform and Open Source Digital Fashion…
digitalax.xyz

Digital Fashion X Fashion Technology, BCI, and lots of new sensors in all our devices, and on our bodies.
This technology convergence also comes with new brain computer interface sensors, and other sensors to track the entire body, the eyes, the heart rate, your breathing, to do affective computing, prediction your emotion, intention, and even diagnose you for the diseases.

All the major hardware tech companies in the VR, AR, smart phone space, and wearable tech space (including smart watches, clothing, shoes etc) are adding new sensors to our devices.

Gabe Newell talked about Brain Computer Interfaces, OpenBCI, and the future integration with VR, such as with the Valve Index
In January 2021 Gabe Newell talked about Brain Computer Interfaces, OpenBCI, and the future integration with VR, such as with the Valve Index

“Gabe Newell says brain-computer interface tech will allow video games far beyond what human ‘meat peripherals’ can comprehend”

Gabe Newell says brain-computer interface tech will allow video games far beyond what human 'meat…
The head of US gaming company Valve Corporation says a future is fast approaching where video games will use data from…
www.tvnz.co.nz

A great article by Skarred Ghost that goes in depth into cooperation between OpenBCI and Valve for future Valve Index devices.

OpenBCI: games using brain-interfaces are coming in 3 years
You know that I have a big passion for Brain-Computer Interfaces, a passion that has grown even more when I understood…
skarredghost.com

It’s easy to imagine that Valve Index headset with eye tracking and eeg sensors could lead to experiences in online game worlds built with WebXR technology such as Cryptovoxels with BCI & Eye tracking the computer could do what is called affective computing. That means predicting your emotions, intentions, and perhaps even giving you a medical diagnosis.

Tobii, an eye tracking company that has had its products integrated into some HTC Vive headsets, is also part of the new deal with Valve.
The Tobii, Valve, and OpenBCI partnership means eye tracking, and eeg sensors will probably be included in the next Valve Index headset.

Tobii, Valve, and OpenBCI Engaging in Research Collaboration to Make VR Gaming More Immersive
STOCKHOLM, Feb. 4, 2021 /PRNewswire/ — Tobii, the world leader in eye tracking, today confirmed that it is engaging in…
www.prnewswire.com

Tobii is the world leader in eye tracking
Welcome to Tobii. Visit our website to learn more about how eye tracking works in assistive technology, research, work…
www.tobii.com

faceobok Research at Siggraph
At Siggraph in 2019 faceobok Research revealed its work to capture the face, eyes, mouth, with sensors in a VR headset and reconstruct your face as an avatar in VR (and in AR)

VR Facial Animation via Multiview Image Translation
In this work, we present a bidirectional system that can animate avatar heads of both users' full likeness using…
research.fb.com

VR facial animation via multiview image translation

VR facial animation via multiview image translation
A key promise of Virtual Reality (VR) is the possibility of remote social interaction that is more immersive than any…
dl.acm.org

Apple's AR VR Patents
What Apple's patents tell us about their future VR and AR headsets is that Apple is interested in using many more cameras and other sensors to track everything about your face and body, to reconstruct the digital you in VR & AR.

The Apple AR VR patents have shown us descriptions of how they plan to capture eye movement, jaw movement, hands, fingers, gestures, facial expressions. Extra cameras for high precision hand tracking that includes two handed gestures.

This will be combined with outward-facing sensors to track the body, the room, others. The Apple patent "Display System Having Sensors" describes some of this.

Just think about how Apple phones can already use complex face tracking software to unlock the phones, or to animate Animoji's. From these patents we can guess that Apple intends to provide the same features that faceobok has been showing for years at Siggraph in their AR VR headsets.

Google's Soli sensor
A radar beam that captures finger motion in 3D space. Touch your hands to press buttons & dials with fingers, palms, and thumbs. You will see your hands with WebAR and Virtual Reality.

Project Soli- Google ATAP
Our team has introduced the Soli chip, platform and interaction model to the Pixel 4 phone. The Soli sensor is located…
atap.google.com

faceobok doesn’t think Google’s Soli is safe

faceobok wants further study around Google's Project Soli waiver request
faceobok is raising some red flags over Google's request to operate its Project Soli radars at higher power levels in…
www.fiercewireless.com

With this information we can infer that Apple’s Patents are pointing us towards the same functionality as Google Soli, only accomplished with many more cameras compared to using a radar beam.

The over arching point here is that all of the major tech companies in the AR VR Device space want to be able to capture every part of you, and the world, to digitize both you and the world.

At some point your Apple watch, for example, with these technologies, will know everything about you. If your watch observes you admiring a can of soda for example, the question that follows from that is, will your insurance company somehow get ahold of this information, adjust your risk profile, and increase your monthly bill?

These VR AR headsets also have microphones like your phone. With Deep Neural Networks the possibilities are endless.
For example researchers have been using Deep Neural Networks to analyze voices and coughs to try to diagnose Covid-19. What other medical conditions could we diagnose from your biometric sensor readings?

Covid-19 has been detected from a cough.

Artificial intelligence model detects asymptomatic Covid-19 infections through cellphone-recorded…
Asymptomatic people who are infected with Covid-19 exhibit, by definition, no discernible physical symptoms of the…
news.mit.edu

Since March 2020 there has been intense research to diagnose Covid-19 from your voice.

Clubhouse can be used to mass diagnose viral infections and ID you.

Diagnosing COVID From a Person’s Voice
In March, as the staggering scope of the coronavirus pandemic started to become clear, officials around the world began…
www.scientificamerican.com

The Mars Rover: A new discovery Deep Learning + Microphones

I heard a story about an engineer working on iot devices discovering that with deep learning neural networks he could use the microphone to provide data that would normally be extrapolated from the accelerometer. The microphone could for example be used to filter noise caused by vibrations. Apparently the scientists at Nasa working on the Mars Rover were surprised to discover that they could do this with the Microphones on the Rover which they discovered after the Rover had landed on Mars.

After a lot of searching I found a paper titled “Soundr: Head Position and Orientation Prediction Using a Microphone Array” Which is another surprising way to use Microphones & Deep Learning. Potentially this means that the Microphones on the Mars Rover could be used to track which way the Mars Rover is facing.

Soundr: Head Position and Orientation Prediction Using a Microphone Array
Although state-of-the-art smart speakers can hear a user's speech, unlike a human assistant these devices cannot figure…
dl.acm.org

I also found “A deep learning approach to multi-track location and orientation in gaseous drift chambers” https://www.sciencedirect.com/science/article/abs/pii/S0168900220310378

Deep Learning + Wifi or Radar
New research: Using radar or wifi researchers could analyze tiny changes to the transmitted signals caused by subtle body motion, such as heart rate & breathing rate. When combined with deep learning it was used to predict the emotions of subjects. A good question is what else could deep learning & wireless signals reveal about a person? Could we identify someone’s biosignature this way? Could this be another tool to diagnose someone’s medical condition? Can we predict human intentions, and things like a person’s political party when combined with other data sources?

“For this study, the scientists employed deep learning techniques, where an artificial neural network learns its own features from time-dependent raw data, and showed that this approach could detect emotions more accurately than traditional machine learning methods.” source https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0242946

It does not seem likely that any human knows the limits of what can be detected and predicted when combining sensors with deep learning.

There are also numerous advances in medical imaging technologies on the Horizon not limited to the following:

Electrical Impedance Tomography with Deep Learning
Solving Electrical Impedance Tomography with Deep Learning
Electrical impedance tomography (EIT) is the problem of determinate the electrical conductivity distribution of an…
deepai.org

Furaxa Microwave Imaging
Furaxa
Ultrafast Electronics
furaxa.wordpress.com

Neuralink
Home
Developing ultra high bandwidth brain-machine interfaces to connect humans and computers.
neuralink.com

Openwater
Technology | Openwater
Using Near Infared Light, Computed holography and Novel liquid crystal display technology to bring MRI resolution to a…
www.openwater.cc

Functional NIRS imaging
This conversation “Optical Imaging with Kyle E Mathewson”, dived into how FNIRS, or Optical imaging technology might detect the firing of a neuron, because the body of the neuron swells when firing, and it also points to how we might detect disease like Covid-19, because the virus Sars-Cov2, causes vasoconstriction (by degrading the Ace2 receptors largely in the endothelial lining), and thrombosis (blood clots) (the damaged enthothelial lining releases blood clotting factors like von Willebrand factor (VWF), which affects the flow of blood that is what FNIRS and similar technologies detect.

HD-DOT
“HD-DOT” “uses light to detect the rush of blood”

“What we’ve shown in this paper is that, using optical tomography, we can decode some brain signals with an accuracy above 90%, which is very promising.”

Decoding visual information from high-density diffuse optical tomography neuroimaging data
HD-DOT can support binary visual decoding with high sensitivity and specificity. * HD-DOT can support detailed decoding…
www.sciencedirect.com

You can read more about this description of Sars-Cov2 here

1. Pulmonary Vascular Endothelialitis, Thrombosis, and Angiogenesis in Covid-19
https://pubmed.ncbi.nlm.nih.gov/32437596/

2. This review of 1000 Sars-Cov2 papers studying the effects of Covid-19 on the human brain also comments on this idea, but particularly it shows how the Sars-CoV-2 ACE2 receptor is able to invade the human brain as a consequence of viral damage to the endothelial cells which form part of the blood brain barrier. “The critical role of proteins S and E in HCoVs, specifically 0C43, and the slow movement of the blood in the brain’s microcirculation, can aid in the interaction of the SARS-CoV-2 S protein with the ACE2 receptor expressed in the capillary endothelium. Viral damage and recruitment of endothelial cells can promote invasion of the CNS by SARS-CoV-2 [23, 59–62].” https://pubmed.ncbi.nlm.nih.gov/32925078/

I also wrote about Sars-Cov-2 via ACE 2 degrades your endothelial lining and the implications of that with links to many papers in April of 2020
https://medium.com/silicon-valley-global-news/d-ribose-coronavirus-covid-19-sars-cov-2-research-on-potential-therapeutics-47d8ef56a9ff

If you are super interested to talk about next generation brain computer interface research you should join this faceobok group.

Self-Aware Networks: Computational Biology, Neural Lace
Group Objective: To build Neural Lace, Artificial Cortex, and Artificial brains. Neural Lace is also knowns as Neural…
www.faceobok.com

Brain Computer Interfaces, and new sensors to track every aspect of humanity on a mass scale force us to think about a broad range of new considerations from neuro-hacking, to neuro marketing, cognitive nudging, privacy, public safety, human rights, and environmentalism.

With all of these advances in sensor technologies, especially combined with deep neural networks. It would be understandable if you eventually begin to question your reality and your mind as Yuval Noah Harari explains in his conversation with Mark Zuckerberg in April 2019.

Can we trust technology companies like faceobok and Google to protect our privacy, safety, our consent and our human rights? I like technology companies but history shows us that we cannot blindly trust corporations to do this by default. We need legislation as well to protect humanity including foreigners, from the potential risks of these new converging technologies.

A Conversation with Mark Zuckerberg and Yuval Noah Harari - About faceobok
Today, Mark Zuckerberg shared the third conversation of his 2019 personal challenge. He sat down with Yuval Noah…
about.fb.com

Mark Zuckerberg explained in his talk with Sapiens author Yuval Noah Harari. How when free nations demand companies store data locally (in their own countries) it legitimizes authoritarian nations to do the same, this in effect allows all nations, to secretly compel faceobok to hand over that data for their own nefarious purposes. (As long as faceobok's data centers are located in that country.)

Since some of faceobok's servers are located inside the United States we can logically deduce from facts, including many news reports, that the US Government is using faceobok messenger to spy on other countries and also all Americans who have conversations with people who live in other countries which is almost all Americans. The US Government can then map and study the relationships of all these faceobok friendships, and they have the option to study your private conversations with the aid of computer automation and analysis tools.

Mark Zuckerberg explained this perhaps as a warning as foreign nations increasing demand that faceobok build data centers in their countries. This would be the most plausible reason why.

faceobok Building Green Data Centre In Ireland
faceobok has announced that they have started building a data centre in Ireland. The new data centre will be their…
technology.ie

In addition we have this statement from former US Attorney General William Barr who infamously wrote a public letter asking faceobok to not add end to end encryption to faceobok Messenger by default. End to end encryption in theory could prevent or make it difficult for faceobok to read your messages, and thus it becomes difficult for Governments to read your messages.

Attorney General Barr Signs Letter to faceobok From US, UK, and Australian Leaders Regarding Use of…
The Department of Justice today published an open letter to faceobok from international law enforcement partners from…
www.justice.gov

The risks of these technologies converging are not limited to neuro-hacking with brain computer interfaces, or to nation states forcing tech companies to comply with mass spying activities, there are potential dangers from hacking Augmented Reality, potential safety issues with using AR in public from distractions, and the potential for environmental pollution from over-use of the energy expensive proof of stake systems.

The potential dangers with Augmented Reality usage in public.
Aria
Andrew Bosworth, Head of faceobok Reality Labs has said that facial recognition technology is a thing that faceobok is "looking at" in relation to AR devices. This scenario presents challenges

like what about protecting information privacy, like with google glass, you are going to have a camera recording what you see? Won't people be upset about that? Or will they be okay with it?

Announcing Project Aria: A Research Project on the Future of Wearable AR - About faceobok
Today, we're excited to unveil Project Aria - a new research project that will help us build the first generation of…
about.fb.com

These devices have or will have cameras, world tracking, eye tracking, audio recording, and multi-modal deep neural networks that could potentially reconstruct a volumetric representation of you, the places you visit, and your entire daily life, they may predict your thoughts and feelings, like Apple's fingerprint & face recognition these devices may capture a person's unique biometric signatures in body movement/gait, in your voice. These devices can be used potentially to diagnose medical information, whether you are having a heart attack, a seizure, a stroke, are tired, drunk, on drugs, it could figure out who you are attracted to and establish a semantic record of your love life, and all your other relationships, your psychology, your faults, your strengths, from this information.

Project Aria | About faceobok
With Project Aria, we are building towards a future where our devices disappear into the flow of everyday life, enhance…
about.fb.com

So solving the privacy issue in theory means that this data capture can't be saved or uploaded to the cloud, and that's what a commercial company like faceobok is talking about right now. A privacy first idea. What's going to enforce faceobok's Privacy First Idea? Only legislation. Until governments decide to pass legislation on tech companies to enforce faceobok's Privacy First Idea, we don't have a means of enforcement should faceobok fail to live up to it's ideal.

With WebAR, Deep Learning & Digital Fashion there could come a day when we need to worry about what a computer could do "if the computer had a contextual understanding of the environment you are in? It could change anything in the environment."

Imagine that this next generation software could actively hides things from you that you should be avoiding, such as a low hanging branch, or a nail with wood sticking out of it. It could, in theory, deliberately hide the sight of oncoming car from you, or accidentally distract you from something essential like your friend being in danger.

With the first Microsoft Hololens, that I own but have loaned out permanently, it was easy to imagining banging your head on something that you can't see because you were distracted by AR graphics. I have even lost track of some of the things in my environment when using

Google's Project Tango Device. I've also gotten distracted from my environment Pokemon Go by Niantic on my phone, using the AR mode that uses ARkit's technology.

This creates an enormous potential safety problem if you use WebAR to visit an untrusted and secretly malicious website, but also if you just use trusted websites that are accidentally distracting you from your environment.

The ethical considerations for designing AR social networks
All of these concerns call upon us to think about the ethics of design, because it's not just about hacking your brain, or getting distracted, there is also the social networking element of WebAR and VR.

There is a great talk you should check out from GDC in 2017 if you want to hear more about the importance of ethics in AR VR social networks

"MMO designer Raph Koster talks about the social and ethical implications of turning the real world into a virtual world, and how the lessons of massively multiplayer virtual worlds are more relevant than ever."

Raph Koster helps us to understand that we developers need to be proactive about designing programs that protect people in chatrooms from things like virtual rape, virtual molestation, using systems like consent (people have to be approved by you before they can speak, or be seen or have other privileges), a real names policy, and other considerations.

We also need tech companies and governments to respect the consent of the people. So there are projects like the Cognitive Integrity Protection Act (which I heard about in a Clubhouse chat but I still know very little about.) which apparently it aims to create national legislation to compel companies into protecting user privacy, and to not using our devices, and their software to nudge our minds or influence our decisions.

Will these technologies, like Deep Learning, BCI, WebAR, the Internet, Digital Fashion NFT remain open and accessible to everyone worldwide? So that every country can develop with them? Will totalitarianism overcome democracy? Will the powerful effectively end freedom? Or will freedom, democracy, and self governance prevail?

These are issues that everyone in the world must consider eventually when they understand the world we are moving towards, the mass convergence of science & technology, and so we must ask ourselves about the great implications

Are we helping human rights? Are we reducing the total global energy consumption? Are we correctly addressing the present and future issues of climate change?

I so appreciated that when I was thinking the different possible ethical considerations of Augmented Reality I saw that Emma-Jane, CEO of Digitalax had partnered with the Human Rights Foundation.

So that calls upon us to think about ethics. I appreciate so much that Emma-Jane, CEO of Digitalax had partnered with the Human Rights Foundation.

The Human Rights Foundation's "Wear Your Values" campaign is partnering with DIGITALAX "to draw attention to human rights concerns in closed societies, voice the importance of a globally transparent supply chain and bridge the Digi-Fizzy (Digital-Physical) realms for promoting positive compounding action & distributed content generation native to movements for social & economic change." read more with this link:

HUMAN RIGHTS FOUNDATION x DIGITALAX: Social Asset Exclusive Auction | Going LIVE during Crypto…
Converging Human Rights with Digital Fashion.
digitalax.medium.com

Part of Emma-Jane's contribution to solving these Human Rights Issues has to do with PODE, which is an erc1155 access token.

PODE | Native Digital Asset Valuation Mechanism | Fractional Garment Components
Our recent release of the Fractional Garment Ownership License and Distribution Standard 1.0 (FGO-0001) set forth the…
digitalax.medium.com

When I asked Emma-Jane for additional clarification on PODE she wrote this.

"PODE is an access token into another project under the bigger umbrella. It is its own container and it serves as another keystone, where if it were removed from the overall system the other stones would collapse. You can't just take gears out of a machine and then expect the machine to work. PODE, as stated in the original released article, acts as a proof of ownership for DIGITALAX's digital experiences, digital economies and digital networks. This is true." — Emma-Jane, CEO of Digitalax

"To breakdown this further to reinforce how we are approaching this in a way that actually creates proper value for the rest of the ecosystem, it is an entry point for young and upcoming players and creators to break in, field test and level up. This is what then generates and ensures defensibility, community growth and long term value with a consistent byproduct of rewards, which in part are returned to the PODE holders for engaging in this system. This means, that PODE holders directly hold the keys to being able to test run early games, mods, content experiences, digital experiences and events of the upcoming creators — evaluate and assess this content through DIGITALAX's Native Digital Valuation Mechanism (Released and detailed

further under our FGO standard). These BETA economies are where the value for the PODE holders comes from. Just like the significance of the on-ramp of fiat to crypto. There must be a low barrier to entry for the highest levels of potential talent at the earliest points in their trajectory, for those crossing into this digital realm. The ability to level up must mean something and that is why we take the approach to developing PODE that we do." — Emma-Jane, CEO of Digitalax

Digitalax is helping to make Digital Fashion environmentally friendly.
In addition Digitalax run's it's smart contracts, and $MONA transactions, on Polygon which is a "zero-gas", "proof of stake" blockchain platform that is interoperable with ethereum, that enables artists to know that they are not polluting the environment

Digitalax only accepts $MONA for payment (in auctions and instant buy collections (Exclusive, Semi-Rare and Common)). However $MONA ERC-20 can be mapped from Ethereum to Polygon and back again.

Matic Layer 2 Integration. Going Live Next Week.
This announcement sets out more details around our launch to Matic network, going live next week! Ethereum gas prices…
digitalax.medium.com

See my story:

"Don't blame climate change on artists or fashion designers who use NFT. A deep dive into Cryptoart.wft numbers & logic. What is the big picture for climate change, what are the solutions, how can we help?"

Don't blame climate change on artists or fashion designers who use NFT.
I took a deep dive into Cryptoart.wft the numbers and the logic, then I looked at the solutions, what the big picture…
vrma.medium.com

We have established that NFT is environmentally smart when combined with proof of stake, especially when the blockchain is powered like green energies that include solar, wind, and hydropower.

We can and must pass legislation to protect individuals from past & future corporate & government abuse. We need to go beyond talking about these issues, beyond commitments from company leaders to do better, to passing legislation, a way to legally enforce and protect human rights when it comes to technology, we can work together to encourage our local governments, our state governments, and our national governments to pass common sense laws, laws to compel companies like faceobok to keep their word to protect human privacy and other human rights for example. This goal is in part to also compel faceobok and other

companies to finally make all their messenger apps encrypted from end to end by default, and to install systems of consent in social media, augmented reality, and virtual reality chat applications, like Raph Koster talked about, and something like a system of consent to protect our cognition from being influenced or nudged by companies that use data, advertising, or try to influence people in anyway.

Assuming that we get these ethical considerations resolved, and these technologies are actually delivered into our devices, the next question is how will people use these new technologies in the native digital economy of the future?

A historical example could be the Player-Creator gaming community from Japan, with in-game economies.

“Japanese games have pioneered the way for more advanced user gameplay, appealing to the early adopter demographic. MyCryptoHeroes, an RPG game featuring a sophisticated in-game economy, came onto the scene and continues to top the charts of DappRadar. MyCryptoHeroes was one of the first games to combine on-chain ownership with more sophisticated off-chain gameplay. Users could use their heroes inside of the game and then transfer them to Ethereum when they wanted to sell them on secondary markets.” quote from OpenSea source link https://opensea.io/blog/guides/non-fungible-tokens/

MyCryptoHeroes featured an in-game economy, because with these technologies we will be able to be the characters in these games, in real life, we can be inside real life RPGs with cool graphics.

The My Crypto Heroes Playbook — Episode 1: Game Ecosystem Design
A behind-the-scenes look into one of the most played blockchain games in the world. A written format of a presentation…
medium.com

Accel World
Accel World was a Japanese Anime series that featured people playing games together in Augmented Reality that would transform their appearances. Their AR devices are brain computer interfaces. Augma, or Nerve Gear.

On the left is one of the main heroes Kuroyukihime as she looks normally, on the right is that same hero as she appears in Augmented Reality
Kuroyukihime

Kuroyukihime

Kuroyukihime (黒雪姫, Kuroyukihime) is one of the main characters in the Accel World series. She is the Black King (黒王…
accelworld.fandom.com

Much of the technology we have discussed in this article would be a necessary pre-cursor for their technology to work. Accel world is set in the same universe as Sword Art Online.

Cecile Tamura wrote “The concept about a holographic figure has been in Japan since 2007. She is also a vocaloid”

GaiaOnline (h/t Cecile)

A long time ago (think 2007) GaiaOnline was an Anime-themed social networking and forums-based website.

“Users had the ability to customize their avatar in many ways, including skin tone, eye style and color, hairstyle and color, gender, race (e.g. human, vampire, elf, zombies), and attire. Numerous clothing items and accessories for avatars can be purchased from a range of NPC-run stores using the site currencies, Gaia Platinum and Gaia Cash. Avatars appear next to posts in the forums and profile comments (the post itself encapsulated in a “speech bubble”), and in Gaia Towns and Gaia rallies, and other environments the avatar appears as a movable character that can travel from place to place, interacting with the environment (catching bugs, shaking trees, digging for buried treasure, collecting trash and flowers, etc.) and other users.”

Elder Scrolls Online
You will be able to buy clothing for your game just like you shop in games like the Elder Scrolls Online where I recently watched a well known player named Khaljitt on twitch (has more than 78.3k followers) selecting the costume for the character.

With these technologies Khaljitt could wear this character in real life, if you have AR glasses, and the right permission, you could see Khaljtts AR character.

Now you can imagine that in the near future you are walking down your favorite street in New York City wearing designer fashion AR glasses, seeing yourself as a character in an RPG, or wearing the latest Digital Fashion.

Thanks to partnerships between tech companies and designer fashion brands, your glasses have WebAR, the Augmented Reality Web inside them, overlaying interactive computer

graphics on the world around you, and allowing you to wear your Digital Fashion NFT purchases.

How will this become mainstream?
Major Technology companies will increasingly partner with major Fashion Brands.
Technology companies will use deep learning to create pixel perfect avatars of you with accurate measurements that you can share with retailers.
Retailers will help you to find fashion, clothing, shoes, underwear that fits you perfectly.
Retailers will give the customer the option to share their measurements with Luxury Designer Fashion Brands
Specifically, technology companies like faceobok, Apple, Google, Microsoft, Magic Leap, Valve, Varjo, Vive, and many more will capture your eyes, expressions, posture, into 3D models in AR in real time so you can see someone's avatar in AR mode that hides their AR glasses, wearing their digital fashion items, Fashion designers, with your consent, will be able to use your avatar to have perfect measurements of your entire body that they can use to fit their designs to.

In September 2020 Amazon created its Luxury Fashion Hub, featuring designer Oscar de la Renta
Amazon, the biggest retailer in the world, and a big investor in AR VR technology, with the customer's permission, will likely use these pixel perfect body measurements (thanks in part to pyTorch3D, Tensorflow 3D, and 3D Semantic Segmentation.) To help customers find clothes that fit perfectly, and Amazon will likely make it easy for you to share your measurements with designers and fashion brands like Oscar de la Renta, and Amazon's partners's will likely profit enormously because the improved measurements will translate to greater customer satisfaction numbers. Following Amazon other retailers, fashion brands, luxury brands, clothing and shoe makers around the world will follow suit, jump on the band wagon, and do the same, so they are not left behind.

faceobok and EssilorLuxottica
Mark Zuckerberg has said (paraphrasing) that augmented reality glasses (and VR headsets) will someday look like an ordinary pair of glasses. To him the form factor is super important. and he has talked about partnering EssilorLuxottica, an Italian eyewear conglomerate, the world's largest company in the eyewear industry. With the idea that you will have AR (and VR) built into fashion glasses, eventually. faceobok's first AR Glasses, code named Project Aria, are set to launch this year in 2021

faceobok Partners with designer glasses brand EssilorLuxottica
At faceobok Connect in 2020 Mark Zuckerberg revealed his vision to combine faceobok's Augmented Reality glasses with Fashion Designer Glasses by talking about his partnership with EssilorLuxottica, the maker of Ray-Ban, Oakley, and they make frames for Armani Versace. These designer augmented reality glasses will ship this year in 2021.

In this scenario, that I think is implied, you might wear AR glasses most of the day everyday, and potentially you never have to sit at a computer desk again or sit to use a laptop again.

Essilorluxottica
EssilorLuxottica is a global leader in the design, manufacture and distribution of ophthalmic lenses, frames and…
www.essilorluxottica.com

Aria, or faceobok's AR Glasses, in terms of being a smaller form factor, is really also the future direction of Oculus Quest, I hope that the Quest 3 will have color cameras with higher resolution for pass-through AR, so developers can work on Apps that run on both Quest and Aria.

There are other examples of Luxury Designer Brands converging with Tech Companies, to create Fashion Tech products and Digital Fashion. I will just note a few examples:
Ralph Lauren PoloTech T-shirt has sensors to track breath depth, heart rates, balance, calories & more to an app on your iPhone

RL Mag - The PoloTech Game Plan
Your browser's Javascript functionality is turned off. Please turn it on so that you can experience the full…
www.ralphlauren.com

Drest. a small company with a gaming app, signed Gucci, Stella McCartney, Burberry, Valentino, Prada, and 100 more luxury brands so that digital versions of luxury clothing appear in apps and video games, and then customers can buy physical versions of those luxury items.

Louis Vuitton, a luxury brand partnered with video game League of Legends by offering in-game Digital Fashion "skins" including a capsule collection by designer Nicolas Ghesquière.

Gucci partnered with Wanna Kicks to create Augmented Reality filters that let customers preview Ace sneakers on their feet.

Digital Fashion also leads to a new experiences in retail shopping, especially with 3D Light Field Displays and 3D Deep Learning.
In the video discussion included at the beginning of this article Anina, the CEO of 360Fashion Network, pointed out that the future of Digital Fashion includes novel use screens to display 3D models in retail environments to revolutionize the in person shopping experience. When the store becomes a screen, your store can be anywhere, in an airport in Singapore, a giant mall in China, or your favorite street in Paris France.

The screen you see can act like a magic mirror, to let you try on items digitally, because they will be able to create a perfect 3D avatar of you in real time, with precise measurements, thanks to 3D Deep Learning, and then you can try on anything in the store's inventory, or have items fitted

to you in real time, tap a button, and the real item gets shipped to your home so its there when you arrive.

The outdoor 3D displays that will help transform the retail experience include Lightfield displays. There are three companies in this area that I am watching. These three companies will help bring AR VR Digital Fashion applications to the world without headsets or phones. Light field displays will help to create the Holodeck that was imagined in Star Trek.

This will be exciting to people in real life, when they visit their favorite places, you can think about being able to experience the real being brought into the virtual realm, and the virtual realm being brought into the real. An early example might be the Instagram areas that you can see at some malls in China.

Looking Glass Factory
Looking Glass Factory · The World's Leading Holographic Display
Looking Glass Portrait. Designed for people, real and imagined. Looking Glass Portrait is for the millions of creators…
lookingglassfactory.com

Lume-Pad
Lume Pad | Creators Edition - The World's First 3D Lightfield Tablet
"When we combined a breakthrough in nanotechnology with the power of computer vision and AI, we knew we were onto…
www.lume-pad.com

Light Field Lab
Light Field Lab
Light Field Lab is building the world's most innovative holographic ecosystem. The company was founded in 2017 by Jon…
www.lightfieldlab.com

Emma-Jane MacKinnon-Lee the CEO of Digitalax is playing a key role in helping to make this vision of the future possible.
Digitalax which as we discussed last time, interested me in part because it is a giant ball of concepts neatly organized and stacked together. You've got Pode, Dash, Mona, Fractional Garment Ownership, NFT, Smart Contracts, ESPA, the Player Creator Portal, the Player Access Card, and on top of that I could not help but connect everything she was doing with convergence of brain computer interfaces, sensors, Deep Learning, Augmented Reality, Virtual Reality, and AI enhanced affective computing with our devices and headsets.

There are so many things to talk about, Emma-Jane, for example is an expert on many things that the average person knows little about. Each of this topics is easily a days conversation, or a podcast, or an article or a class with prerequisite classes for some people (I've been reading her articles) The sheer scale of what Emma and Digitalax is doing, everything combined, including

the speed at which Digitalax is moving just towers over what most people in the world are imagining. This is why I embarked on creating a series of articles to show how her technology is connected to all these other technologies and all these global industries, this is the second article, the first can be found here.

Digital Fashion, Art, NFT, AR, VR, WebXR, 3D Deep Learning, BCI, and the future native digital…
We interview Emma the CEO of Digitalax, to learn why NFT underpins Digital Fashion, Art, and how this ties into WebXR…
medium.com

Emma-Jane writes: “DIGITALAX: This is the underlying digital assets supply chain and logistics router. It serves as the umbrella and the shepherd for each of the subset projects. Digital Fashion is the wedge into the market and spiritual underpinning. Fashion is one of the most essential components of what it means to be human; self expression, identity forming, creativity, how we select our mates. And it is also where computing came from. Textile production at the start of the industrial revolution is what led directly to the machines that we are typing these conversations on. There is something undeniably beautiful about that. The purpose of DIGITALAX is to create a sustainable on-chain transparent supply chain for native digital goods, particularly digital fashion — the core industry. Part of the reason for that is to establish the ability to assess value in an industry that dwarfs most others ($3 trillion is quite a bit of money before it has even been amplified by the transformation into digital). But more than that, it’s not about the industry size, it’s about human nature. Fashion is an inevitable and existential pillar of what it means to live fully digital lives. And digital is already dominant. So brief summary, DIGITALAX is building the infrastructure for a sustainable and scalable digital fashion industry to exist, as a vital bridge into fully digital lives” — Emma-Jane. CEO of Digitalax

At the center of Digitalax is ESPA
“ESPA is the core use case and token platform implementation architecture for DIGITALAX’s native ERC-20 utility token, $MONA. The whitepaper token economics introduced the concept of “Casual Play” into DIGITALAX, and the importance of $MONA when it comes to serving to further incentivise utility and application in the Player-Creator economy.” Source:

Enabling Players and Creators in the DIGITALAX and ESPA Ecosystem | Player Access Card (PAC)
Through ESPA we are introducing the Player Access Card (PAC).
digitalax.medium.com

“ESPA provides, for the first time, a full incentive driven triad between Digital Fashion Designers, Developers, Players, to engage in an ecosystem that directly embeds sustainability into the model — through our native ERC-20 utility token $MONA.” — Emma-Jane. CEO of Digitalax

“MONA: There were 10, 000 $MONA issued, to be distributed through our NFT and LP staking over the course of 12 months. We started staking distribution in December, and there are still 9 months of token distribution to go. Staking was chosen as the most fair way to distribute this token. The team took 0% of $MONA token allocation, and the DIGITALAX treasury was allocated 10% of the total 10,000 for R&D maintenance, operations and project furtherance.” — Emma-Jane. CEO of Digitalax

“You can think of ESPA as a well defined Layer 2 utility and application environment to the entire gaming, VR, 3D industry. Any game developer can plug in and start showcasing their content, allowing players to engage in casual esports battles and earn income streams in $MONA. The Digital fashion from the DIGITALAX supply chain and marketplace is the core identity authentication for the players as they engage in cross-content matches. The designers and devs within this ecosystem also get income streams in $MONA. We are starting with indie devs, modders, because we recognise the human and business sense in identifying radically undervalued assets and people and removing the barriers arbitrarily blocking their growth.” — Emma-Jane. CEO of Digitalax

A 3D clustered chart, made with D3 & Threejs
These converging technologies mean that you will be able to use software libraries like D3 and Threejs to create 3D graphs of your life, from your health data, to your trades, to the progress in your games.

Imagine that you could wear your bio activity, as something that could change your digital fashion in ways that people who know you understand.

Read more about the 3D Clustered Chart, D3 and threejs here:

3D Clustered Chart
ClusteredChart is a 3D representation of the grouped column chart visualizing categorical dataset in three-dimensional…
observablehq.com

NFT, Crypto, XR, Deep Learning Success Stories
Nyan Cat sold for 300ETH, A Rare Hashmask sold for 650K. Deep Learning projected to create more value than the Internet. Oculus Quest developers make millions of dollars indicating an explosion in sales for the VR industry.

NBA Top Shot: Collectable Sportscards with videos that let you own a moment in sports history: NFT Success Stories/ NBA Top Shot $230 million in transactions.
Top Shots are officially licensed by the NBA. NBA Top Shots what is it? It’s a little weird to explain if you haven’t…

vrma.medium.com

Plasmapay: DeFi for The Masses
“Consider PlasmaPay for example — a digital payments company that has optimized the fiat-crypto-fiat conversion process for millions of people from over 165 countries. The PlasmaPay app lets users purchase digital assets with virtually any Visa/MC card. In other words, you could deposit money from your bank account and instantly spend.”

PPAY (PlasmaPay): DeFi For The Masses
Participating in an Token Swap Event is a high-risk activity albeit this Token Swap Event, in particular, is aimed at…
plasmapay.com

CryptoKitties was one of the first NFT success stories in the history of NFT

I recommend that people read the “History of non-fungible tokens (2017–2020)” by OpenSea. History of NFT. Today the developer of CryptoKitties is making a new success story called NBA Top Shot. I wrote a story about that below.

Blockrocket
Blockrocket was building NFT platforms before ERC-721 was ratified: Read this article where James Morgan of Block Rocket explains his companies support for Digitalax and her vision of the future of digital fashion.

“We at BlockRocket have been building NFT platforms for ourselves and others since before ERC-721 was even a ratified standard. When Emma approached us with her vision of the future of digital fashion it was an opportunity we could not refuse.”

Digitalax — taking digital fashion to new levels
Composable NFTs, timed auctions, FBX assets and a digital fashion moonshot 🚀
medium.com

Digitalax
Digitalax has had many successful NFT auctions since then and continues to innovate in the NFT space working with artists, fashion designers, smart contract writers, creating worlds, a new file format and specification for 3D file interoperability between 3rd party programs, and a player-creator economy that bridges a convergences of technologies that will transform the world and create the native digital economy for future generations.

Polygon
Polygon is making it easy for NFT companies like Digitalax to have much lower cost transfers, use zero-gas, and save the environment with a Proof of Stake Network that is interoperable with Ethereum.

Ethereum's Internet of Blockchains
Ethereum is the blockchain development platform of choice, but it has limitations. Low Throughput Poor UX (gas, delayed…
polygon.technology

TradeStars
This decentralized trading platform for ‘Fractional NFTs,’ connects economic DeFi incentives to real-life statistical data. Thanks to the new governance token, TSX, users can now get paid for their sports knowledge, by wagering on their favorite athletes’ performance estimates.”

TradeStars - How much is your sports knowledge worth?
TradeStars is a fantasy sports platform powered by the Ethereum blockchain where users can own, create, trade and…
tradestars.app

Beeple at Christies
The incredible story of Beeple selling digital art that was created over 5,000 days on Christie’s

“Created over 5,000 days by the groundbreaking artist, this monumental collage is the first purely digital artwork (NFT) ever offered at Christie’s “

“‘Christie’s has never offered a new media artwork of this scale or importance before,’ says Noah Davis, specialist in Post-War & Contemporary Art at Christie’s in New York. ‘Acquiring Beeple’s work is a unique opportunity to own an entry in the blockchain itself created by one of the world’s leading digital artists.’”

Beeple's masterwork: the first purely digital artwork offered at Christie's | Christie's
How Mike Winkelmann, aka the digital artist Beeple, has combined 5,000 images to create a monumental NFT-based work
www.christies.com

Other NFT Successes are not limited to: Ben Mauro’s EVOLUTION, Bitcoin Origins, KOGS, Nifty Gateway, Rarible, and Superrare.

WebXR
Ready to learn how to program with WebXR? This is a screenshot from a new course on three.js a library that is at the heart of developing WebXR. Threejs-Journey, a class taught by Bruno Simon. At threejs-journey.xyz

Learn: Threejs with Threejs Journey
Three.js Journey - Learn WebGL with Three.js

Subscribing to Three.js Journey will give you a lifetime access to a complete and easy to access course of 32 lessons…
t.co

Check out 8thwall's real time reflections.

WebAR
In our previous article I mentioned that developers can create WebXR applications with threejs, A-Frame, react three fiber, babylonjs, Unity, playcanvas, and more. This week I thought I would share some resources for how people can create WebAR apps specifically.

Here is a link to the previous article by the way:

Digital Fashion, Art, NFT, AR, VR, WebXR, 3D Deep Learning, BCI, and the future native digital…
We interview Emma the CEO of Digitalax, to learn why NFT underpins Digital Fashion, Art, and how this ties into WebXR…
medium.com

If you want to start building WebAR today, of course you can start with Unity, 8thwall, AR.JS, or you can try your hand at making stuff with just the WebXR API which can be used in combination with A-Frame, threejs, react three fiber (via React XR) and should be compatible with Babylonjs, Playcanvas, and others either now or in the future(not sure when))

To start with the WebXR API directly. I can recommend a two part article. This works great if you have a newer Google Android phone to develop on such as the Pixel 4 or 5 it uses ARcore for tracking. The WebXR community is seeing evidence on the internet that Apple will be bringing WebXR support to Webkit and thus to ios phones soon so that your same applications will use ARkit for tracking on iphone. In addition you can write applications that work in the Hololens, and the Magic Leap thanks to the Firefox Reality browser.

WebKit Feature Status
Cannot find something? You can contact @webkit on Twitter or contact the webkit-help mailing list for questions. You…
webkit.org

WebAR with WebXR API: Part 1
WebAR with WebXR API, Part 1
WebXR API and other WebAR Approaches
medium.com

WebAR with WebXR API, Part 2
WebAR with WebXR API, Part 2

In this article, I would like to introduce some key pieces of code for the actual usage of the WebXR Device API at this…
medium.com

I also host a coding meetup (4th year) where we will be focusing on WebAR this year. It's called WebXR Online Coding Support

WebXR Online Coding Support is a meetup that is only for programmers (not recruiters or companies looking to hire) making apps with webxr related open-source code libraries, not limited to threejs, A-Frame, react three fiber, babylonjs, playcanvas, webgl, webgl 2, wasm, webgpu, rust, neurotech or neural networks.

SF Virtual Reality (San Francisco, CA)
We're the leading virtual reality gathering in San Francisco, and we have a great time! Our format is very casual and…
www.meetup.com

You can get a link to join the WebXR Online Coding Support discord here:

Join the WebXR Online Coding Support Discord Server!
Check out the WebXR Online Coding Support community on Discord - hang out with 271 other members and enjoy free voice…
thexrweb.com

Feel welcome to follow me on twitter. twitter.com/worksalt

Micah Blumberg on twitter

Please join the Deep Learning group on faceobok and other groups that Cecile and I both admin to comment, share your ideas, and participate in the growing conversations.

a0215z
(oscillat, fourier)
It can be challenging to imagine your soul as a computational space. However imagine you are like a circle in a fourier transform, like you are a combination of frequences and amplitudes from oscillating positions. Imagine you are like a cycle of neural coincidence patterns connected by a process similar to what AI people call "deep learning". So your neural circuits connect together tempo-spatial patterns and make predictions about future inputs. These connected predictions are the roots of thinking, and decision making is a motor response to these future predictions, that predict the causes (of movements) in the world. So in summary your brain is connecting sense stimulated spatial positions, frequencies, and amplitudes to predict the future and coordinate a movement. A computer can definitely simulate this process and so a computer can simulate a conscious experience.

a0216z
(hebb, perception, oscillat, field, qualia)
It is very significant. You know an oscillation is about a thousand neurons, they get going together, and they oscillate some distinct pattern over and over again, it could be something in your field of vision that is an oscillating bunch of a thousand or more neurons. Hallucinated into perception because of the cyclic impact on the whole of the brain.
4 hours ago · Like

Micah Blumberg
http://www.cnbc.cmu.edu/neuroninfo1

Carnegie Mellon, Pitt Researchers Detail Phenomenon That Explains Mechanisms Neurons Use To...
www.cnbc.cmu.edu
Center for the Neural Basis of Cognition

Micah Blumberg
Putting together a bigger picture. Internal representation, aka qualia as "tiny phase changes" in brainwave oscillations (apply information theory to explain how phase changes can be information and computational rendering to explain how information can be a rendering of 3D art, 3D sound, touch, taste, smell that each part of your brain is experiencing like a sequence of eyes, or layers with perception being bound together by the oscillations, entified, the mental illusion of Daniel Dennet Hallucinated as Anil Seth puts it), large cyclic waves from distinct hebbian learned patterns, formulating a thought prediction as collected energy resulting in a surging action once enough energy has been accumulated to begin a bigger oscillation
http://www.hhmi.org/research/neural-basis-decision-making-and-cognition

Research abstract for Michael N. Shadlen, M.D., Ph.D. | Howard Hughes Medical Institute (HHMI)
www.hhmi.org
Michael Shadlen studies the neural mechanisms responsible for these mental processes that intervene between sensation and behavior.
3 hours ago · Like · Remove Preview

a0217z
(oscillat, field, dendrite, synap)
It would be interesting to try to put AI to the task of modelling chemicals at various stages of transition and simulating their functions by evolving its own functions with gan-synthesis and reinforcement learning.

It would work like multi gans each try to model each stage of the chemical transition the most accurately, one of them is voted on, the rest organize themselves in order of their voltage, how close it is to threshold

but they all wait for that same neuron to fire, to fire themselves one at a time really super fast but in distinct sequential order where each neuron waits for its turn

they play back a firing sequence, and it was based on the order in which they would have fired,

if they were triggered one at time, to cross their internal threshold voltage for firing, that first neuron added

something to the others as long as it was in their receptive field.

so they all fire within milliseconds of each other, so it seems like an oscillation, but it was like the grid triggered a sequence of lights to all go off in order

the dendrite is the neuron's receptive field in a sense, but really any synaptic connection to another neuron is part of its receptive field, the area under it's observation.

At the neuronal level you don't know anything, a neuron is an oscillator & dissipative system with a threshold for maintaining its electro-magnetic equilibrium, it has to regularly discharge a burst of energy to its surrounding environment, to offset the charged ions its receiving from other neurons that are pushing it towards its action potential event. A neuron is alternately is a resonator or decaying oscillator.

The reason I can argue this is because a neuron only understands phases, because to the neuron that's what it's receiving from the many synapses on its many dendritic arms connected to many cells, its receiving bursts, mini-vibrations, or phase patterns from other neurons that indicate they burst at a fast but light phasic rate, fired at a slower tonic rate that delivered a stronger pulse, a 3rd setting inbetween, or that they went silent from inhibition instead of the other modes. The neural oscillator rotates its neurons between these three different modes.

a0218z
(oscillat)
It's like the brainwave itself, the oscillation, can contain a musical note, or a visual note, or the taste of a note, do you note the taste of this wine compared to another wine? This other wine has a cheddar note in the beginning, with a fruity finish.

Notes can be multi modal blocks within a sequence, as if all blocks in a sequence are etched into a universal block (in each step of each sequence) for storing internal representation patterns in a compressed manner.

It's a situation where you have many simultaneous blocks happening at the same time in the brain.

So imagine if you have been working hard for a long time, and you are seeing the fruits of your effort, you are succeeding somehow through your own hardwork to pay rent in life. Maybe you are an artist and you are good at art and good at social networking and selling your art.

It's a copy of the person that is equal to the original person. For people to be okay with that Star Trek's society would have had to have concluded that people are not really alive in the first place, that we are just animated materials, and that there is true continuity of a person hood between 1 moment of time and the next moment in time, so identity is an illusion anyways, and what is being transported was never you, because there is no you, but the pattern that the concept of you is associated with does continue when it's re-materialized, but every moment of existence is like de-materialization & re-materialization anyways.

a0219z
It’s a simulation because without the external process of matrix multiplication the structure of the network wouldn’t do anything, in a real neural network, in a biological brain, the components of the network operate according to the physicals of biology where each component is a facilitating a fractal information feedback loop in order to maintain electrical, thermal, and structural equilibrium.

So what is a unit of computation in the brain. Is it a neuron? Is it a neural circuit? What’s a neural circuit? Is it a column of neurons? Is is a region of brain activity encompassing many columns, does it take many regions of simultaneous activity to create an information pattern in the brain that has temporal and spatial characteristics

http://bigthink.com/robby-berman/buh-bye-traditional-neural-networks-hello-capsules?utm_campaign=Echobox&utm_medium=Social&utm_source=faceobok

a0220z

Feb 11, 2021

https://medium.com/silicon-valley-global-news/digital-fashion-art-nft-ar-vr-webxr-3d-deep-learning-bci-and-the-future-native-digital-eb87eb7a100

Digital Fashion, Art, NFT, AR, VR, WebXR, 3D Deep Learning, BCI, and the future native digital economy.
We interview Emma the CEO of Digitalax, to learn why NFT underpins Digital Fashion, Art, and how this ties into WebXR, Virtual Reality, 3D Volumetric Capture, Lidar RGB Fusion, affects future Neuroscience research, defines future digital economies, the tools, the news, and some research.
Digitalax X SVGN.io News
Written by Micah Blumberg with major contributions from Cecile Tamura and Emma-Jane MacKinnon-Lee from Digitalax. https://youtu.be/c_CgEIxhwaA

Micah Blumberg, and Cecile Tamura from Silicon Valley Global News interviewed Emma from Digitalax.

Introduction

I follow many artists on social media, and one day on of my favorite artists, a Virtual Reality Artist named Anna Zhilyaeva (who is world famous) posted that she had sold her first ever NFT for $24,593. For the VR communities on social media this was big news. You could make a painting in Tilt Brush and auction it as an NFT for potentially thousands of dollars!

Across VR social media groups where I re-shared Anna's news the response -seemed to be enormously positive, with many people congratulation Anna Zhilyaeva on her excellent work, commented on how well deserved it was for her to have had such a big success with her first non fungible token sale.

Anna Dream Brush - Anna Zhilyaeva - Virtual Reality Artist - VR painting live performances
Virtual reality painting and live performances worldwide - Anna Zhilyaeva - VR art
www.annadreambrush.com

A brief history

The first time I heard about this coming convergence between NFTs and Virtual Reality was at GDC the Game Developer Convention in April of 2019 in a talk called Blockchain Game Development and ERC-1155. I sat in the audience as Enjin introduced this new protocol to the world.

Shortly after that point in time I started to have discussions with people in San Francisco, about how we could use WebXR libraries like Aframe and make it possible for people to bring in game items with ERC-1155 (a non-fungible token protocol)

What is an NFT?

What is an NFT? (Non-Fungible Tokens) — ERC-1155 VS ERC-721
Imagine inheriting a gold ring or receiving one as a gift. Wonderful. You'd probably want to know what the ring's value…
kriptomat.io

The big idea is that you could receive an item from a game and you would get to keep that item outside the game. In the game Legend of Zelda for example you may get a sword, but you don't get to keep it, when the game is over the sword is gone, trapped in the game. On the other hand if you were to get that item with NFT that would mean that you owned it and you could keep it even after you left the game.

NFT answers the question of how do you attach authenticity, verification, and digital ownership to an item. That could be a digital item, or a physical/digital hybrid item and how can you attach ownership to that?

Emma explained that in the past eight months the NFT market has exploded. A lot of artists have recently moved into the space to learn about NFTs and how they can use them to monetize their own work.

About Emma-Jane MacKinnon-Lee and Digitalax

Emma (age 22), the CEO (and in my mind a genius) at Digitalax, has always sat within the hybrid of math & science on one side, with a lot of art & creativity on the other side. She was really good at math, science, and biology, but also greatly moved by art and fashion. She has spent time just looking at the future, trying to imagine future industries, what does the world look like in 10 years, 50 years, or even in the year 2100 she has contemplated. One of her big answers is that Gaming, VR, AR and 3D content are going to play a big role in earth's future that is leading to native digital economies.

"If this is the future", she asks, "what are the details of that, what would that look like? What are the interesting market segments that will be really big and generate a lot of value for a lot of people?"

For Emma the answer that rang out was Digital Fashion. "Digital Fashion is undervalued at the moment if 3D VR AR is the future. People will start expecting that the digital fashion industry exists."

"We started focusing on the designer side, how to bridge the NFT market, where is the value coming from and how do you make that sustainable? A lot of it is focused on cosmetic side, [but] digital fashion has to have application utility for using this kind of asset. How can these digital fashion assets be integrated into game and VR experiences? How about indie e-sports or mod e-sports? How can you bring identity to the players?

Digital Fashion
What we are talking about with digital fashion, and what we are talking about in Emma's case includes 3D models of dresses & textures, an artist or fashion designer can create something that is really sort of a costume for your virtual character in one sense.

Today NFT underpins Digital Fashion, buyers can actually own these items in the digital world, knowing that what they purchased is backed on the blockchain and secure. Then both the buyer and the wearer can really have a new emotional experience with their item(s), with a sense of

connection and a sense of ownership from the digital fashion items that are now truly their own because the proof of that ownership is backed by the blockchain.

Digitalax has been alive in this Non-fungible Token / Digital Fashion market for two and a half to three months, taking the perspective of bringing digital fashion into the space, before that it was just artwork dominated. Digital Fashion is going to play a huge role in 3D content industries in the future, gaming, VR AR identity and self expression.

The Player-Creator Economy began in Japan long before NFTs arrived.
Cecile Tamura pointed out that the player creator community has been going on in Japan for a long time, and that goes back long before NFT's and blockchain arrived on the scene.

Japan: leading mobile games by sales 2019 | Statista
Learn more about how Statista can support your business. PR Times. (January 29, 2020). Leading mobile games in Japan in…
www.statista.com

Cecile shared with me that the Player-Creator economy is a billion dollar industry and growing, its been a big part of Japanese culture for a long time and it has been exported to other countries and keeps growing.

Fate/Grand Order is a great example of how big this economy is, it is a free to play RPG game, in Japan, that features in app purchases and has made billions.

"Fate/Grand Order from Sony's Aniplex continues to be one of the world's most lucrative mobile games, having just surpassed $4 billion in lifetime player spending according to Sensor Tower Store Intelligence estimates."

Fate/Grand Order Surpasses $4 Billion After Becoming Japan's Top Grossing Mobile Game of 2019
Fate/Grand Order from Sony's Aniplex continues to be one of the world's most lucrative mobile games, having just…
sensortower.com

Cecile also wrote saying "There's a cascade of news coming out yesterday about Genies partnering with Unity to build its virtual avatar world. It also includes their fashion. And they are starting to talk about NFTS. With traditional retail sales down during the global pandemic, fashion brands like Gucci and The North Face have recognized this new market and entered the space. The North Face offers in-game gear for Pokemon Go while Gucci has partnered with Genies to offer apparel and accessories for its celebrity avatar clientele — all of which can be purchased by the consumer to accessorize their own alt-persona.

The North Face offers in-game gear for Pokemon Go

The North Face x Gucci Fashion Saga Continues … on Pokémon Go | GearJunkie
Yes, The North Face and Gucci collab is a reality. And now, it's an augmented reality too. Just a few short weeks ago…
gearjunkie.com

Snap Partners with Ralph Lauren to create Bitmoji Wardrobe

Snap Partners With Ralph Lauren to Create Bitmoji Wardrobe
Ralph Lauren is coming to Bitmoji closets. The brand has partnered with Snap to create a virtual wardrobe for Bitmoji…
www.yahoo.com

Genies partnering with Unity

Why Genies partnered with Unity to build its 3D avatar world
Look, you came to this site because you saw something cool. But here's the deal. This site is actually a daily email…
thehustle.co

Cecile also wrote: "To track the evolution of fashion and avatars, look at the concept of the digital runway show. Initially a novelty to help brands promote their lines while under Covid-19, we saw elite fashion brands use avatars to showcase their real world designs. Then the avatar and digital goods market began to grow. Now, we're seeing an influx of apparel brands presenting similar digital collections as before, BUT the apparel on display can be purchased both for human and avatar."

Rise of the Avatars: Their Future in Gaming, Fashion and Music

Rise of the Avatars: Their Future in Gaming, Fashion and Music
I recently hosted an industry roundtable about the rise of avatars in a variety of entertainment and retail businesses…
musebycl.io

Genies will let consumers create their own 3D avatars with Giphy and Gucci

Genies will let consumers create their own 3D avatars with Giphy and Gucci
Genies is expanding its focus from celebrities to everyday consumers with its 3D avatars for social apps from the likes…
venturebeat.com

CryptoGenies? Digital Avatars Are Coming to Dapper's Flow Blockchain

CryptoGenies? Digital Avatars Are Coming to Dapper's Flow Blockchain — CoinDesk

After finding a fit for digital collectibles outside the blockchain realm, Genies is bringing its customizable 3D…
www.coindesk.com

So what sets Digitalax apart?
My argument is that Digitalax is going above and beyond these other companies with a multi-layered approach that focuses on the end goal of bringing application utility to these 3D NFT Digital Fashion assets, and that has to include building the technology to not only bridge artists work with 3D applications, but also the infrastructure that leads to the native digital economy.

The three layers of the Digitalax strategy:
Layer 1
I would describe the first layer of Digitalax as being about the Content Supply Chain, from creation to distribution, with ERC protocol standards, this is in part about Digitalax's partnerships with Fashion designers, to create really unique digital fashion garments. It's about digital ownership, full IP assignment and rights, to these 3D files, to the FBX, to the 3D asset, to the gif, digital fashion. How can you streamline the idea of a digital fashion? Digitalax has answered that and gone beyond answering that to actually working with designers who minted their textures on chain with Digitalax's help in a concept Emma created called Fractional Garment Ownership.

Fractional Garment Ownership
Edit description
digitalax.gitbook.io

Within Layer 1 we've got blockchain smart contracts, working with artists to making sure they can sell their stuff, everything from their 3D models to their textures is tracked, if someone contributed a texture then when it goes to auction everyone can get paid because everything is tracked.

Layer 1 Explained: Digital Fashion Operating System.
Layer One of our Operating System is all about optimised content creation and streamlined distribution channels. We are…
digitalax.medium.com

To start with an artist or designer could use a 3D model creation program, plausible examples might include Blender, Maya, Cinema 4D, 3DSmax, Houdini, you might get a 3D model out of that.

blender.org — Home of the Blender project — Free and Open 3D Creation Software
Open source 3D creation. Free to use for any purpose, forever. Blender is the free and open source 3D creation suite…
www.blender.org

A 3D artist may want to also think about rendering it really nicely with products like Renderman or Octane. With a render farm like Octane an artist can ray trace all the light rays to create the most beautiful realistic art.

RNDR or Render Token, 3D artists and 3D animators can think of Octane as a company that provides a render farm, with Render Token people can loan out their unused GPU time to that render farm, and get rewarded for that with RNDR tokens.

“RNDR gives GPU owners an opportunity to monetize otherwise idle GPUs by offering their compute power to creators in search of rendering resources. In short, RNDR allows GPU owners to loan out their GPU power to creators in need of additional power.”

Render Token
background Layer 1 ® OTOY’s token-based render network Learn more OctaneRender® is the world’s first and fastest…
www.rendertoken.com

Otoy also created a file format for 3D files called ORBX, which is the foundational technology that led to the ITMF specification and the Immersive Digital Experiences Alliance.

“The ITMF specification is based on ORBX® scene graph technology, a format created by OTOY and now supported by dozens of software systems used in 3D animation and game development. Starting with the ORBX scene graph format, ITMF is designed as an interchange and distribution format for conveying high-quality, complex image scenes to immersive media displays over commercial networks. Applications range from passive viewing, gaming, and telepresence, including six degrees-of-freedom (6DoF), to next-generation light field displays. Recognized for its potential to deliver an immersive, true-to-life experience, light field is now considered the richest and most dense form of visual media, thereby setting the highest bar for features that the ITMF will need to support and the new media-aware processing capabilities that commercial networks must deliver.”

Immersive Digital Experiences Alliance™ (IDEA) Releases First Set of Specifications for Immersive…
Designed to Streamline Delivery of Complex Imagery to Immersive Media Displays Over Commercial Networks, New Immersive…
www.immersivealliance.org

IDEA Videos — Immersive Digital Experiences Alliance
The Immersive Digital Experiences Alliance (IDEA) is a non-profit trade alliance working towards developing a family of…
www.immersivealliance.org

Which I mentioned because for me that is another connection back to Emma's company Digitalax, and the second layer that Emma is working on which is about her development of the open source 3D file format specification called DASH.

Layer 2: Dash File Format Specification and File Intercommunication Architecture.
Layer 2 Explained: Digital Fashion Operating System.
Layer Two of our Operating System is built around enabling interoperability for digital fashion assets. We are…
digitalax.medium.com

Dash or the second layer of Emma''s strategy' is what interests me the most out of everything that Emma has been doing (and this article doesn't cover all of it) because it enables the interoperability of the Player Creator system with the Artist-Fashion Community, by solving a long standing issue with 3D file formats. Dash aims to solve a problem facing 3D artists, game & web developers alike with a novel approach that uses opinionated logic, and Fourier transforms to create an accurate & compressed representation of a 3D model in it's original environment (such as a 3D program) and transfers it's appearance accurately to another environment (such as a game engine).

Read about Dash:
Revision 1.5: DASH File Format Specification and File Intercommunication Architecture.

Revision 1.5: DASH File Format Specification and File Intercommunication Architecture.
We are releasing the next revision of the DASH File Format Specification and File Intercommunication Architecture. View…
digitalax.medium.com

In the video I referred to the Fourier Projection Slice theorem also known as the Fourier slice theorem.

Projection-slice theorem
In mathematics, the projection-slice theorem, central slice theorem or Fourier slice theorem in two dimensions states…
en.wikipedia.org

Layer 2 is meant to answer the question: what is the technical innovation needed to bridge these 3D assets, how can you bring them in applications, where they are rendered correctly, and are usable.

Emma is creating Dash to answer the second part, it's a new file format that solves the problem of 3D file interoperability in a smart way.

Emma created the Dash File Format to be an open source standard for enabling the interoperability of digital fashion assets, and other 3D items, maintaining the accuracy of their

appearance with opinionated logic, and maximizing their compression size and speed with the fourier transform.

3. Layer 3: The Player Creator Economy
This is leading to third layer of Emma's strategy, creating the player-creator economy, building the metaverse from Snow Crash, the Oasis from Ready Player One, the Matrix (film 1999), Sword Art Online, Gun Gale Online, Accel World, and so on.

Layer 3 Explained: Digital Fashion Operating System.
Layer Three of our Operating System ensures an ecosystem that is Player-centric and directly Player-influenced. Fashion…
digitalax.medium.com

Layer 3 is about The Application utility: building an industry: Sustainable value generation. An example is PODE. PODE is a Perpetural Ownership and Digital Economy based on NFT. That you can access to for personalized experiences across gaming, VR, and other live 3D content applications.

https://pode.digitalax.xyz/

You can begin to develop your own applications that connect to the Pode economy, and if you are interested in that it's time to get familiar with game engines and webxr scripting frameworks.

Player creator developer tools: Game Engines & WebXR
With the aid of game engines like Unity, Unreal, Godot, and WebXR tools like Aframe, Threejs, Babylonjs, Playcanvas, React three Fiber you can help build the future digital economy.

Games made with game engines like Unity, Unreal Engine, and Godot can either be streamed to the browser, or imported into a webpage via wasm to run on webgl with the WebXR standard.

WebXR https://immersive-web.github.io/webxr/

Unity

Unity — Unity
Unity is the ultimate game development platform. Use Unity to build high-quality 3D and 2D games, deploy them across…
unity.com

Aframe could be the fastest way to create a super simple AR or VR application on the web, it wraps around threejs.

A-Frame — Make WebVR

A web framework for building virtual reality experiences. Make WebVR with HTML and Entity-Component. Works on Vive…
aframe.io

Threejs is high level scripting that interfaces with WebGL

Three.js — JavaScript 3D library
Edit description
threejs.org

Babylonjs is intended to be more of a game engine, it's supported by Microsoft.

Babylon.js: Powerful, Beautiful, Simple, Open — Web-Based 3D At Its Best
Our mission is to create one of the most powerful, beautiful, and simple Web rendering engines in the world. Our…
www.babylonjs.com

Playcanvas, is a different approach to WebXR because it has its own built in hosting solution.

PlayCanvas — The Web-First Game Engine
This site uses cookies to ensure you have the best experience when using our site. More information. Mobile Browser…
playcanvas.com

Exokitweb integrates multiple platforms, so every WebXR page can interface with every other WebXR page, regardless of the platform, library, or framework that they were created with.

Exokit Web
Exokit Engine
web.exokit.org

React Three Fiber (r3f) is an astonishing new tool that makes it so easy for React developers to start integrating threejs graphics into their web pages that I can easily see companies like faceobok and Twitter using r3f (React Three Fiber) to make 3D versions of the most popular websites (like faceobok, Twitter)

pmndrs/react-three-fiber
react-three-fiber is a React renderer for threejs on the web and react-native. npm install three react-three-fiber…
github.com

Janusweb is a different approach to WebXR in that its more like a world that you help create.

JanusWeb
The World Within The Web
web.janusxr.org

Mozilla Hubs

NFT Based WebXR Platforms
WebAverse is also a world but it's different for a few reasons.

"In Webaverse, you can package and load in an existing 3D website written using THREE.js, A-Frame, Babylon, or any other WebXR compatible JavaScript framework".

"Since Webaverse is built with NFTs, any creation in Webaverse can be bought, sold, and traded on open and decentralized marketplaces like OpenSea."

Webaverse
An open virtual world built with existing communities..
webaverse.com

Cryptovoxels is a virtual world powered by the Ethereum blockchain. Players can buy land and build stores and art galleries. Editing tools, avatars and text chat are built in. It's built with Babylonjs.

A virtual blockchain world
Popular parcels based on in world visits. User-created and hosted events. Click on an event for more info! Screenshots…
www.cryptovoxels.com

Decentraland's virtual world was first built with Aframe, then it was rebuilt with Babylonjs, and then it was rebuilt with Unity. Each time they claimed that the change was for performance reasons. The reality however is that all the game engines and webgl webxr apps seem to face the same kinds of challenges for rendering performance. (outside shaders, but webgpu fixes that.) While Unity offers a nice toolset for both beginning developers and professionals I believe that all of these other tools have the capability to be as performant as Unity is in the hands of an experienced software engineer with ninja level coding skills.

Welcome to Decentraland
Create, explore and trade in the first-ever virtual world owned by its users.
decentraland.org

There are several WebXR service providers offering something like a proprietary closed source subscription based pricing model like @MetaVRse @the8thwall @ZapperApp and in my opinion the pricing models seem to be thinking about huge corporate customers. WebAR and WebVR applicatoins are in demand by Fortune 500, and Fortune 100 brands.

Beyond these three layers interest in NFT, and crypto currency is growing in part thanks to recent news.

For example the other day the Price of Bitcoin reached a new all time high $48,226.25 shortly after the news that Elon Musk's company Tesla had bought $1.5 billion in bitcoin, and that Tesla has plans to accept it as a form of payment.

Ethereum, what NFT protocols are based on also all reached a new peak high at 1786.28.

Conclusion

One of the things I like the most about Emma's company Digitalax is the Dash file format specification. Interestingly she appears to have coined the term Material Instance Segmentation, in a paper I read that explains part of how Dash works

One research topic that this reminded me of is the topic of 3D semantic segmentation, are you familiar. I first learned about it via a talk by Or Litani in San Francisco years back
https://orlitany.github.io/

Like Material Instance Segmentation (which is accomplished with opinionated logic instead of neural networks) 3D semantic segmentation is a niche inside the topic semantic segmention, and a niche inside the topic of 3d object segmention, and those are niches inside the idea of using neural networks for capture or rendering, and those topics are niches inside the topics of capture, rendering, and deep learning respectively, and deep learning is a niche inside machine learning, rendering is a niche topic inside the computer graphics industry, and so on.

I suspect that very few people have climbed this far atop this information technology stack, and that's just part of what Emma is building.

In a previous article Cecile Tamura and I interviewed Urho from Varjo about their Mixed Reality headset that integrates Lidar & RGB in a fusion algorithm to capture the real world and turn it into a cinematic object at 90 frames per second.

Varjo, with XR-3, has made the first fusion algorithm on top of lidar with video pass through. Varjo's fusion algorithm is combining volumetric capture (lidar) with video, with Nvidia's deep learning optical flow…
medium.com

The best news is that the science behind the technology under discussion is real, the research out there that you can find backs up the science behind the concepts that Emma is talking about and the concepts behind what Varjo is talking about. Here are a few references to science articles that I dug up.

“Deep neural networks have made good progress in 3D shape reconstruction owing to their powerful ability to extract priors from big data [18, 15, 21, 9, 6, 27, 12]. However, high-resolution 3D shape reconstruction is still challenging due to the cubic growth of computational cost.” (…) “The thickness map is the 2D spatial projection of the 3D shape, which is easily predicted from the input image by a general convolutional neural network.” (…) “We have exploited the Fourier projection slice theorem and introduced the 2D thickness map which can reduce the domain gap between the input image and 2D slices. A deep network was built to predict the thickness map from the input image by exploiting the edge and silhouette constraints. This network allows us to predict fine details (edges) and global shape (silhouettes) of thickness map separately from the input image, which allows a more accuracy reconstruction result.”
https://openaccess.thecvf.com/content_CVPR_2019/papers/Shen_3D_Shape_Reconstruction_From_Images_in_the_Frequency_Domain_CVPR_2019_paper.pdf?fbclid=IwAR32vXasRpZ3yWNs4TkKW5nxuL_FDMx90iho3bUFJXIvXldJtkCSt5dNHuU

“(…)can also be used for the accurate semantic segmentation of a 3D LiDAR point cloud and how it represents a valid bridge between image processing and 3D point cloud processing(…) Finally, we demonstrate that this architecture is able to operate at 90fps on a single GPU, which enables deployment for real-time segmentation.”
https://arxiv.org/abs/1905.08748?fbclid=IwAR2bd4FB2hjhBJUsc6sPQhPKfCnmHS5wvX4FltFm6ZJdnqUZ3LcrGUPoPn0

“PointSeg: Real-Time Semantic Segmentation Based On 3D LiDAR Point Cloud

YUAN WANG et. al.

+

Related Papers”
https://www.paperdigest.org/topic/?paper_id=arxiv-1807.06288&fbclid=IwAR1fOAdBo9ml7X3YpZ1ngx-pSk199GK5GKWGudB1idLzSi7zl_3N75eYspQ

A preview of that future can be seen in this article which is about using two Multi-modal-neural-network-models for 3D Semantic Segmentation, one for capture and the other for rendering.

OpenAI’s DALL-E and CLIP 101: a brief introduction
After GPT-3, OpenAI returns with two models that mix text and image. Will 2021 be the year of DALL-E in the field of…
towardsdatascience.com

We should expect that 3D Semantic Segmentation (Deep Neural Networks) will be integrated into Lidar RGB fusion algorithms on your iPhone, so anyone can easily create fantastic 3D models with something as easy as a phone because of the convergence of technologies.

Being able to store these new 3D models in a compressed way is where Dash can play an important role.

This also affects the future of neuroscience in terms of the study of neural correlations, because when you have semantic segmentations of the real world, you can use that data with deep neural networks and affective computing combined with biosensors and new medical imaging technologies to take the research of studying neural correlations to a new level.

a0221z

Feb 8, 2021

https://medium.com/silicon-valley-global-news/synaptic-unreliability-a-foundational-concept-found-in-deep-learning-and-in-computational-a97c5dca9e90

Synaptic unreliability, a foundational concept, found in deep learning, and in computational neuroscience, has been undermined by a math proof that shows us that MVR (multi-vesicular release) is wide spread in neocortical synapses.
This new research may impact companies like Numenta, Google, faceobok, Deepmind, Tesla, OpenAI, and the way neural networks are designed in the future.
Article by Micah Blumberg http://vrma.io

The concept of synaptic unreliability that is a foundation for computational neuroscience, spike timing models, and deep neural networks is fundamentally undermined by the mathematical proof of widespread MVR (multi-vesicular release) in neocortical synapses.

Background: “Impact of synaptic unreliability on the information transmitted by spiking neurons” “This suggests that synapses represent the primary bottleneck limiting the faithful transmission of information through cortical circuitry.” “The postsynaptic neuron can be viewed as an input-output element that converts the input spike trains from many presynaptic neurons into a single-output spike train. This input-output transformation is the basic computation performed by neurons. It is the foundation upon which cortical processing is based.” “https://journals.physiology.org/doi/full/10.1152/jn.1998.79.3.1219

How could MVR affect the capacity neurocomputation? Well even before this researchers had the idea that a single synapse could individually set its own neurotransmitter release, dynamically, through a local feedback regulation.

“The probability of neurotransmitter release: variability and feedback control at single synapses” “(…)neuronal compartments might perform regional integration operations, acting as semi-independent computation units18,130,131. In this scenario, in which a neuron can be thought of as a multiple-unit network, it makes sense that signal/noise adjustments are performed separately for each unit rather than for the cell as a whole. Also, having synapses

with different prs in different dendritic branches means that information from a single axon can be dynamically filtered in a different way at each dendritic compartment.” source https://www.nature.com/articles/nrn2634

“experimental data from electrophysiological, molecular and imaging studies have demonstrated that synaptic terminals can individually set their neurotransmitter release probability dynamically through local feedback regulation. This local tuning of transmission has important implications for current models of single-neuron computation.” source https://www.nature.com/articles/nrn2634

So what is this math proof:
A 2019 paper: Structure and function of a neocortical synapse suggests that neocortical synapses operate with multivesicular release.
https://www.biorxiv.org/content/10.1101/2019.12.13.875971v1

“analysis revealed that the number of vesicle release sites exceeded the number of anatomical synapses formed by a connection by a factor of at least 2.6, which challenges the current understanding of synaptic release in neocortex and suggests that neocortical synapses operate with multivesicular release, like hippocampal synapses”
https://www.biorxiv.org/content/10.1101/2019.12.13.875971v1

“neocortical synapses (…) may modulate their strength more flexibly than previously thought, with the corollary that the canonical neocortical microcircuitry possesses significantly higher computational power than estimated by current models.”
https://www.biorxiv.org/content/10.1101/2019.12.13.875971v1

The above paper was also cited in this article below

“The researchers were able to use a novel mathematical analysis to prove that each synapse in fact has several sites that can release packets of neurotransmitter simultaneously. “This means that synapses are much more complex and can regulate their signal strength more dynamically than previously thought. The computational power and storage capacity of the entire neocortex therefore seems to be much greater than was previously believed,” says Kevan Martin.”
https://medicalxpress.com/news/2021-01-size-nerve-cells-strength.html?fbclid=IwAR1oa80WBfdg0D_E2_ayd_Ajg5xgDfPe-KHsHmUayBMEmBMA2XZHhW1dQCI

MVR https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495900/
The idea of multivesicular release (MVR) being a widespread phenonemon among many synapses was previously covered in a 2015 paper on multivesicular release: “Nevertheless, functional data from many studies strongly suggests that MVR is a widespread phenomenon among synapses — more prevalent than originally assumed.”
“The ubiquitous nature of multivesicular release”
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495900/

“Presynaptic action potentials trigger the fusion of vesicles to release neurotransmitter onto postsynaptic neurons. Each release site was originally thought to liberate at most one vesicle per action potential in a probabilistic fashion, rendering synaptic transmission unreliable. However, the simultaneous release of several vesicles, or multivesicular release (MVR), represents a simple mechanism to overcome the intrinsic unreliability of synaptic transmission.” https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495900/

The key question here is what causes the MVR to change? The answer is the Pr.
“Vesicle Release Probability as Predictor of MVR? What is the principal determinant of MVR? The most parsimonious hypothesis is that Pr regulates whether multiple vesicles are released concurrently. If each docked vesicle can fuse independently in response to an action potential, then the simultaneous release of multiple vesicles will occur more readily at synapses with higher Pr.” https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495900/

Lets define Pr: Pr is the probability that a vesicle is released:
“Multivesicular release occurs throughout the brain: Fast chemical communication between neurons occurs at ultrastructurally-defined synaptic junctions through the release of neurotransmitters. At each presynaptic release site, neurotransmitter-filled vesicles are docked on the plasma membrane ready to fuse upon the arrival of an action potential (Figure 1Ai and Bi). Vesicle fusion and neurotransmitter release then results in receptor activation.”
“The strength of the synaptic signal at the postsynaptic membrane is determined by

the number of release sites (N) see Glossary,
the probability that a vesicle is released (Pr),
the amplitude of the postsynaptic response elicited by the content of each synaptic vesicle (q) [2].” source https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495900/
“Desynchronization of MVR on a supra-millisecond time scale is also evident at inhibitory synapses between MLIs [13] where 0 to 3 vesicles can be released per action potential at single release sites”

So what modifies the Pr? Its the APsyn, and what modifies the APsyn? Potassium.
Presynaptic K+ (potassium) modifies the action potential amplitude (APsyn) which determines the strength of the synaptic signal, including the amplitude of the postsynaptic response, including how many vesicles can be released per action potential (0 -3)

“The potassium channel subunit Kvβ1 serves as a major control point for synaptic facilitation”
"Nerve terminals generally engage in two opposite and essential forms of synaptic plasticity (facilitation or…"
www.pnas.org

“We believe our data provide evidence that the APsyn waveform is a critical modulator of synaptic facilitation in excitatory nerve terminals and that further study of presynaptic K+ channels is warranted across neuronal cell types.”

https://www.pnas.org/content/117/47/29937

“Our central finding is that an important mechanism of synaptic facilitation in excitatory hippocampal neurons is APsyn broadening. We find that the surprisingly rapid frequency-dependent broadening of APsyn is enabled by a unique molecular combination of Kv1.1/1.2 channels with the Kvβ1 subunit. Indeed, this small broadening of the APsyn mediated by Kvβ1 has a tremendous impact on synaptic transmission as the loss of the Kvβ1 subunit blocks synaptic facilitation even during paired-pulse stimulation without altering initial vesicle fusion (Figs. 4–6).” https://www.pnas.org/content/117/47/29937

https://www.cell.com/neuron/fulltext/S0896-6273(14)00897-6?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0896627314008976%3Fshowall%3Dtrue
“APSYN waveform serves as an important regulator of synaptic function.”
https://www.cell.com/neuron/fulltext/S0896-6273(14)00897-6?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0896627314008976%3Fshowall%3Dtrue

“adaptive plasticity: manipulations that increase presynaptic Ca2+ channel abundance and release probability result in a commensurate lowering of the APSYN peak and narrowing of the waveform, while manipulations that decrease presynaptic Ca2+ channel abundance do the opposite. “
https://www.cell.com/neuron/fulltext/S0896-6273(14)00897-6?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0896627314008976%3Fshowall%3Dtrue

Control and Plasticity of the Presynaptic Action Potential Waveform at Small CNS Nerve Terminals
The flow of information in neural circuits is primarily regulated by modulation of synaptic efficacy. Exocytosis of…
www.cell.com

In conclusion the sodium/potassium gradient in the pre-synapse changes the amplitude of the action potential which changes the strength of the post-synaptic activity including how many vesicles are activated. This process that I am outlining allows far more information to travel over each node (or neuron) in a neural network, from the dentrite/soma over the AP to the post synapse. Widespread MVR in neocortical synapses overcomes the information bottle neck imagined by the theory of synaptic unreliability.

So maybe we really need to think about modeling the information criteria of the brain starting at the neurotransmitter level and the ion level? If this hypothesis is right the ideas of simulating a human brain is even further off than the current leading consensus.

We may need to model the ionotropic brain. That means modeling how calcium and potassium ions, stored in the dendrite soma, are changing amplitude & frequency of the action potential, which changes the synaptic output, ie how many vesicles are activated, and what types of neurotransmitter are released downstream, which further alters the ionotropic balance of

dendrites on the receiving end. If one neuron is connected to 200 downstream neurons, when that one neuron fires, with varying strength, varying amounts of vesicle activation, varying quantities and types of neurotransmitters, how are those 200 downstream neurons affected in a different way?

What do you think about the idea of MVP Multi vescular release changing the paradigm of synaptic unreliability, and what it means when the bottle neck of a single neuron is no longer a bottle neck?

Deep learning
Deep learning has 142,995 members. Nowadays society tends to be soft and automated evolving into the 4th industrial…
www.faceobok.com

Self-Aware Networks: Computational Biology, Neural Lace
Group Objective: To build Neural Lace, Artificial Cortex, and Artificial brains. Neural Lace is also knowns as Neural…
www.faceobok.com

Neurophysics
Neurophysics+ has 9,862 members. +Neurophysics is an umbrella topic. Covering a broad range of discussions related to…
www.faceobok.com

Neural circuits: computational, anatomical, and molecular approaches
In this group we learn, discuss, and collaborate towards the goal of understanding the mechanistic operations of the…
www.faceobok.com

Neurohaxor WebXR discord

http://neurohaxor.com

a0222z

Apr 30, 2020

https://medium.com/silicon-valley-global-news/d-ribose-coronavirus-covid-19-sars-cov-2-research-on-potential-therapeutics-47d8ef56a9ff

Covid-19 Sars-CoV-2
Research on the causes and the potential therapeutics for the Coronavirus (originally published April 30th, 2020, only the title & subtitle has changed since publication.)

A news & analysis of the research and therapeutics around the Covid-19 disease and the Sars-CoV-2 virus's impact on human biology written up by Micah Blumberg, Neurohacker, Journalist, and WebXR A-Frame Software Architect at Silicon Valley Global News http://svgn.io http://vrma.io

Chapter 1: The main attack vectors
First thing to know is that when someone is infected with Sars-Cov-2 there are two main receptor paths for it to attack your cells ACE2 and CD147.

LIGANDAL | REGENERATIVE PEPTIDES
Our peptide scaffolds will bolster the immune response to SARS-CoV-2. These scaffolds will also bind to the ACE2…
www.ligandal.com

Blood cells and the endothelium have the ACE2 receptor, and T-cells (your immune cells) have the CD147-spike protein.

ACE2
"Angiotensin-converting enzyme 2 (ACE2)[5] is an enzyme attached to the outer surface (cell membranes) of cells in the lungs, arteries, heart, kidney, and intestines.[6][7] ACE2 lowers blood pressure by catalysing the hydrolysis of angiotensin II (a vasoconstrictor peptide) into angiotensin (1–7) (a vasodilator).[8][9][10] ACE2 counters the activity of the related angiotensin-converting enzyme (ACE) by reducing the amount of angiotensin-II and increasing Ang(1–7)[11] making it a promising drug target for treating cardiovascular diseases.[12][13]

ACE2 also serves as the entry point into cells for some coronaviruses.[5] The human version of the enzyme is often referred to as hACE2.[14]"

Angiotensin-converting enzyme 2
ACE2 Available structures PDB Ortholog search: PDBe RCSB List of PDB id codes Identifiers Aliases ACE2, ACEH…
en.wikipedia.org

Note: Angiotensin-converting enzyme 2 is located on the surface of endothelial and other cells.[15]

Note2: Endothelium is a single layer of squamous endothelial cells that line the interior surface of blood vessels, and lymphatic vessels.

Endothelium
Endothelium is a single layer of squamous endothelial cells that line the interior surface of blood vessels, and…
en.wikipedia.org

CD147
“SARS-CoV-2 invades host cells via a novel route: CD147-spike protein“

SARS-CoV-2 invades host cells via a novel route: CD147-spike protein
Currently, COVID-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been widely spread…
www.biorxiv.org

“SARS-CoV-2 infects T lymphocytes through its spike protein-mediated membrane fusion”

“(…)In other words, these results tell us that T lymphocytes may be more permissive to SARS-CoV-2 infection and less permissive for SARS-CoV infection, similar to the findings in a previous study. Therefore, it is plausible that the S protein of SARS-CoV-2 might mediate potent infectivity, even on cells expressing low hACE2, which would, in turn, explain why the transmission rate of SARS-CoV-2 is so high. It is also possible that other receptors mediate the entry of SARSCoV-2 into T cells, such as CD147, present on the surface of T lymphocytes, which was recently reported to be a novel invasive route for SARS-CoV-2.9”

“Novel coronavirus attacks and destroys T cells, just like HIV”

“the team found that unlike HIV that replicates faulty T cells, the coronavirus does not replicate, showing that the T cells and the virus may end up dying together.” It’s thought that T cells will not replicate the virus, but since other cells do replicate the virus the fear is that the immune system might become compromised.

Novel coronavirus attacks and destroys T cells, just like HIV
The immune system has many components that work together in protecting the body from foreign invaders. One of the most…
www.news-medical.net

“Coronavirus could attack immune system like HIV by targeting protective cells, warn scientists”

Covid-19 may attack immune system like HIV, doctors fear
Researchers in China and the US find that the virus that causes Covid-19 can destroy the T cells that are supposed to…
www.scmp.com

“Reduction and Functional Exhaustion of T Cells in Patients with Coronavirus Disease 2019 (COVID-19)” “T cells were dramatically reduced in COVID-19 patients, especially among elderly patients (≥60 years of age) and in patients requiring Intensive Care Unit (ICU) care. Counts of total T cells, CD8+T cells or CD4+T cells lower than 800/μL, 300/μL, or 400/μL, respectively, are negatively correlated with patient survival.”

Reduction and Functional Exhaustion of T Cells in Patients with Coronavirus Disease 2019 (COVID-19)
BACKGROUND The outbreak of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus…
www.medrxiv.org

Perhaps if there are enough T cells, killer t cells, bcells and antibodies will be enough to trap and end the viral contagion inside the body

“SARS-CoV-2: How a person’s immune system defeated the virus”

SARS-CoV-2: How a person's immune system defeated the virus
Although some people who contract SARS-CoV-2 experience serious symptoms, others are able to recover after a fairly…
www.medicalnewstoday.com

Chapter 2: The Main Symptoms
March 24, 2020 “COVID-19 symptoms can be all or nothing: ‘This virus just has the whole kit and caboodle’”

COVID-19 symptoms can be all or nothing: 'This virus just has the whole kit and caboodle'
CLOSE For Elizabeth Schneider, her bout withthe coronavirus began with a scratchy throat, exhaustion and a headache…
www.news-press.com

“(…) data collected by state officials show the most common underlying health conditions among Oregonians who have died from COVID-19.

“Heart disease is the most frequent ailment. Neurological or neurodevelopmental conditions are second most common.

“Diabetes, lung disease and illnesses such as cancer are also on the list.”

Coronavirus in Oregon (April 30): Heart disease most common illness linked to fatal cases
New data collected by state officials show the most common underlying health conditions among Oregonians who have died…
www.oregonlive.com

“The SARS-CoV-2 outbreak: What we know”

“Symptom of CoVID-19 are non-specific and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia and death.”

“the most common symptoms were fever (98%), cough (76%), myalgia or fatigue (44%); and atypical symptoms included sputum (28%), headache (8%), hemoptysis (5%) and diarrhea (3%).”
“Complications included acute respiratory distress syndrome (29%), acute heart injury (12%), and secondary infections (10%);”
”NanShan Zhong’s team (Weijie et al., 2020) found that the most common symptoms were fever (87.9%), cough (67.7%), diarrhea (3.7%) and vomiting (5.0%). 25.2% of the patients had at least one underlying disease (such as hypertension, chronic obstructive pulmonary disease).”

The SARS-CoV-2 outbreak: What we know
The latest summary of the COVID-19 outbreak in China; * There might be an oral-fecal transmission of the virus; *…
www.sciencedirect.com

This video (below) was seen by 16 million people. What if he was exhausted because of the virus? Exhaustion is a symptom.

“Overworked Chinese doctor collapses from exhaustion”

Here we had a video of a Dutch minister passing out in Parliament

When I saw videos and rumors of people falling from exhaustion for me that caused me to begin taking a supplement called D-Ribose, this was either late January or early February. I will talk more about this in the 5th section.

Co-Morbidities
“Preventing a covid-19 pandemic BMJ 2020; 368 doi: https://doi.org/10.1136/bmj.m810 (Published 28 February 2020)”

“The largest Chinese study with 44,672 confirmed cases of Covid-19 shows a high overall case fatality rate (CFR) of 2.3% [2]. Important co-morbidities are hypertension (CFR 6.0%), diabetes (CFR 7.3%), cardiovascular disease (CFR 10.5%) and age >70 (CFR 10.2%) [2]. Similar co-morbidities were noted for the SARS outbreak in 2003. “It is widely unclear what the commonality of these risk factors is. This is somehow surprising as compared to for example the 2009 pandemic H1N1 influenza outbreak, immunosuppressant patients were primary affected. Cardiac patients seem to be at higher risk in Covid-19. One possible answer could be the following: Patients with the comorbidities of hypertension, diabetes and cardiovascular disease might fulfil the indication for the use of angiotensin converting enzyme inhibitors or angiotensin II receptor antagonists [3].”

Re: Preventing a covid-19 pandemic: ACE inhibitors as a potential risk factor for fatal Covid-19

Dear Editor, The coronavirus disease 2019 (Covid-19) outbreak from Wuhan, China, is spreading worldwide and is a major…
www.bmj.com

I remember that Andre Watson the CEO of Ligandal posted his excellent research on the Neurological effects of the Coronavirus early on. I remember people in a “virus study group” were mocking the idea that a respiratory virus was also causing neurological effects, but Andre was right. You can check out Andre’s work at www.ligandal.com

However the idea that the covid-18 disease has neurological symptoms isn’t a controversy, it’s actually mainstream news

04/13/2020 “Coronavirus May Also Cause Neurological Symptoms, Like Headaches”

Coronavirus May Also Cause Neurological Symptoms, Like Headaches
Fever, cough, shortness of breath are the key signs that come to mind with the novel coronavirus, but a new report from…
www.huffpost.com

Mainstream News confirmation of neurological effects of the coronavirus.

27 APRIL 2020 “Coronavirus Patients Are Reporting Neurological Symptoms. Here’s What You Need to Know”
“COVID-19 can also infect cells outside of the respiratory tract and cause a wide range of symptoms from gastrointestinal disease (diarrhoea and nausea) to heart damage and blood clotting disorders. It appears that we have to add neurological symptoms to this list, too.”

Coronavirus Patients Are Reporting Neurological Symptoms. Here's What You Need to Know
As case numbers of COVID-19 continue to rise around the world, we are starting to see an increasing number of reports…
www.sciencealert.com

APRIL 6, 2020 “Mysterious Heart Damage, Not Just Lung Troubles, Befalling COVID-19 Patients”

Mysterious Heart Damage, Not Just Lung Troubles, Befalling COVID-19 Patients
Most of the attention in the COVID-19 pandemic has been on how the virus affects the lungs. But evidence shows that up…
khn.org

Chapter 3: Research on potential therapeutics
Mar 17, 2020 Video “Coronavirus and the Heart: Do ACE Inhibitors and ARBs Increase Covid-19 Mortality?”

The video says that Ace inhibitors are very commonly used in the conditions associated with increased mortality in coronavirus, Cardiovascular disease, Diabetes, Chronic respiratory disease, hypertension, and cancer. In another part of the video Ace inhibitors are hypothesized as being harmful, in another part of the video they are cited as potentially beneficial to patients. The video does not offer a conclusion as to which notion (are ACE inhibitors helpful or harmful) is correct as research is ongoing.

The video linked above included a link to this citation: “Angiotensin receptor blockers as tentative Sars-CoV-2 therapeutics.” This paper says “Notably, angiotensin‐converting enzyme (ACE) and its close homologue ACE2, while both belonging to the ACE family of dipeptidyl carboxydipeptidases, serve two opposing physiological functions. ACE cleaves angiotensin I to generate angiotensin II, the peptide which binds to and activates AT1R to constrict blood vessels, thereby elevating blood pressure. By contrast, ACE2 inactivates angiotensin II while generating angiotensin 1–7, a heptapeptide having a potent vasodilator function via activation of its Mas receptor (Santos et al., 2003), and thus serving as a negative regulator of the renin–angiotensin system. These opposing actions of ACE and ACE2 were recently reviewed by Smyth, Cañadas‐Garre, Cappa, Maxwell, & McKnight, 2019.”

Angiotensin receptor blockers as tentative SARS‐CoV‐2 therapeutics
At the time of writing this commentary (February 2020), the coronavirus COVID‐19 epidemic has already resulted in more…
onlinelibrary.wiley.com

What is cited above establishes that ACE and ACE2 are essentially opposites. For example ACE may constrict blood vessels, while ACE2 may vasodilate.

“ACE2 of the heart: From angiotensin I to angiotensin (1–7).”
“The ACE homologue ACE2 efficiently hydrolyses Ang II to form Ang (1–7), a peptide that exerts actions opposite to those of Ang II. “

ACE2 of the heart: From angiotensin I to angiotensin (1-7).
Cardiovasc Res. 2007 Feb 1;73(3):463-9. Epub 2006 Sep 19. Review
www.ncbi.nlm.nih.gov

It’s interesting how the ACE2 receptor acts on Angiotensinogen ANG II to vasodilate your lymph nodes and your blood vessels and how the Angiotensinogen regulates T cells.

"Regulation of T-cell function by endogenously produced angiotensin II."
Am J Physiol Regul Integr Comp Physiol. 2009 Feb;296(2):R208-16. doi: 10.1152/ajpregu.90521.2008. Epub 2008 Dec 10…
www.ncbi.nlm.nih.gov

“These findings contribute to our understanding of how ANG II and T cells enhance inflammation in cardiovascular disease.”

Regulation of T-cell function by endogenously produced angiotensin II
the renin-angiotensin system (RAS) is a prominent mediator of hypertension and a key target in the treatment of this…
journals.physiology.org

Here we have a paper from 2009 called “Chronic Use of Angiotensin Pathway Inhibitors Is Associated with a Decreased Risk of Acute Respiratory Distress Syndrome.”

Title
This site uses cookies. By continuing to browse the site you are agreeing to our use of cookies. Find out more.
www.atsjournals.org

This paper suggests that ACE inhibitors decrease the risk of ARDS, which is a condition that is associated with the Coronavirus.

“Human T and natural killer cells possess a functional renin-angiotensin system: further mechanisms of angiotensin II-induced inflammation.”

Human T and natural killer cells possess a functional renin-angiotensin system: further mechanisms…
J Am Soc Nephrol. 2007 Apr;18(4):1093-102. Epub 2007 Feb 28. Research Support, N.I.H., Extramural; Research Support…
www.ncbi.nlm.nih.gov

So what I am learning from the above links is that ACE2 receptors effect the renin-angiotension system which effects whether or not T cells and NK natural killer cells amplify inflammation.

“Regulation of T-cell function by endogenously produced angiotensin II”
“the renin-angiotensin system (RAS) is a prominent mediator of hypertension and a key target in the treatment of this disease. ANG II has myriad effects on the cardiovascular system. In many tissues, ANG II activates the NADPH oxidase to produce reactive oxygen species (ROS) (16). In the cardiovascular system, this effect of ANG II has been linked to the induction of cardiac hypertrophy, inflammation, lipid oxidation, endothelial dysfunction, and ultimately increased blood pressure (4).”

Regulation of T-cell function by endogenously produced angiotensin II
the renin-angiotensin system (RAS) is a prominent mediator of hypertension and a key target in the treatment of this…
journals.physiology.org

“Angiotensin-converting enzyme 2 (ACE2) mediates influenza H7N9 virus-induced acute lung injury”

Angiotensin-converting enzyme 2 (ACE2) mediates influenza H7N9 virus-induced acute lung injury
Since March 2013, the emergence of an avian-origin influenza A (H7N9) virus has raised concern in China. Although most…
www.nature.com

“Moreover, ACE2 deficiency worsened the disease pathogenesis markedly, mainly by targeting the angiotensin II type 1 receptor (AT1). The current findings demonstrate that ACE2 plays a critical role in influenza A (H7N9) virus-induced acute lung injury and suggest that might be a useful potential therapeutic target for future influenza A (H7N9) outbreaks.”

Angiotensin-converting enzyme 2 (ACE2) mediates influenza H7N9 virus-induced acute lung injury
Since March 2013, the emergence of an avian-origin influenza A (H7N9) virus has raised concern in China. Although most…
www.nature.com

So when your ACE2 goes missing, the progression of the H7N9 disease worsened, because some how the ACE2 was preventing or reducing your lung injury from H7N9. So what happens when you have a virus that eats ACE2 receptors specifically?

“In this paper, we report that angiotensin-converting enzyme-2 (ACE2) protected against severe lung injury induced by RSV infection”

Angiotensin-converting enzyme 2 inhibits lung injury induced by respiratory syncytial virus
Respiratory syncytial virus (RSV) infection is a major cause of severe lower respiratory illness in infants and young…
www.nature.com

Chapter 4: The mystery of the Blood Clots
April 24, 2020 “Blood Clots Are Another Dangerous COVID-19 Mystery”

““Patients are making clots all over the place,” says Adam Cuker, MD, a hematologist and associate professor of medicine at the Hospital of the University of Pennsylvania. “That’s making management of these patients very challenging.””

Blood Clots Are Another Dangerous COVID-19 Mystery
April 24, 2020 -- Hooman Poor, MD, was tired of watching his patients die, and it looked like another was slipping…
www.webmd.com

APRIL 27, 2020 “Tiny blood clots may make coronavirus more deadly, doctors say”
“Poor and Marrazzo speculated that the virus somehow damages human cells in a way that promotes clotting. Poor noted that COVID-19 patients have elevated levels of D-dimer, a small protein fragment produced by blood clots.”

Tiny blood clots may make coronavirus more deadly, doctors say
The COVID-19 coronavirus appears to promote blood clotting throughout the body, which might help explain why it is so…
www.cbsnews.com

“Coronavirus Pandemic Update 61: Blood Clots & Strokes in COVID-19; ACE-2 Receptor; Oxidative Stress”

This video explains how the Coronavirus is causing blood clots and what’s mind blowing is that it explains to me how the D-ribose I have been taking could be a potential treatment for the Coronavirus! In this video posted above I learned how Sars-Cov2 in degrading the ACE2 receptors is (Ace2 receptors vasodilate and reduce inflammation) leading events like vasoconstriction which may lead to increased blood pressure, pulmonary edema and ARDS, increased the blood clot problems like those we are now seeing in the news causing strokes and heart attacks in young people in their 30s. The virus binds ACE2 and degrades it taking it out of circulation so you get all the symptoms we are seeing the coronavirus cause, the virus takes ACE2 out of the endothelium specifically eventually causing the vasoconstriction, the blood clots, the neurological disease, organ failure, heart attack, stroke, and the oxidative stress and inflammation.

My thought on co-morbidities with coronavirus is that perhaps a combination of the T-cells being attacked, the immune system being compromised, the immune cells causing inflammation because the renin–angiotensin system is out of wack, perhaps in part because the ACE2 have been consumed by Sars-CoV-2, all of this is like taking the brakes off the cars that represent all the other disease a person has (which at the root may also stem from or be worsened by inflammation and oxidation).

Chapter 5: Treating Oxidative Stress
“The role of ribose on oxidative stress during hypoxic exercise: a pilot study.”

“Oxygen free radicals are produced during stress, are unstable, and potentially interact with other cellular components or molecules. This reactivity can influence cellular function, including a prolongation in tissue recovery following exercise. We tested the effect of ribose (d-ribose), a pentose carbohydrate, in a double-blinded, crossover study on markers of free radical production during hypoxic exercise.“

The role of ribose on oxidative stress during hypoxic exercise: a pilot study.
J Med Food. 2009 Jun;12(3):690-3. doi: 10.1089/jmf.2008.0065. Clinical Trial

www.ncbi.nlm.nih.gov

“Cellular protection during oxidative stress: a potential role for D-ribose and antioxidants.”

“Exogenous reducing antioxidant agents, such as vitamin C and/or E, play a role in addressing these formed species; however, recent research has suggested that fruit seed extracts may provide additional cellular benefits beyond their antioxidant features. Furthermore, supplemental D-ribose enhances the recovery of high-energy phosphates following stress and appears to potentially offer additional benefits by reducing radical formation. Specifically, during periods of hypoxia/ischemia, supplemental D-ribose may play an inhibitory role in the breakdown of adenine nucleotides, influencing the subsequent formation of xanthine and uric acid compounds; and thereby affecting the release of superoxide anion radicals. The combination of D-ribose with reducing antioxidants may provide a more optimal state of cellular protection during and following times of oxidative stress.”

Cellular protection during oxidative stress: a potential role for D-ribose and antioxidants.
A healthy cellular system involves the maintenance of an intracellular metabolic balance. Reactive oxygen species (ROS)…
www.ncbi.nlm.nih.gov

“Cell Death and Autophagy under Oxidative Stress: Roles of Poly(ADP-Ribose) Polymerases and Ca2+”

“Oxidative stress induces DNA damage, activating PARP1 and PARP2. Activated PARP signals downstream into DNA repair processes and cell death pathways. It is therefore a key factor in the maintenance of genomic stability“

Cell Death and Autophagy under Oxidative Stress: Roles of Poly(ADP-Ribose) Polymerases and Ca2+
On the cellular level, oxidative stress may cause various responses, including autophagy and cell death. All of these…
www.ncbi.nlm.nih.gov

What happens if you put ACE2 back into the body?

“Inhibition of SARS-CoV-2 Infections in Engineered Human Tissues Using Clinical-Grade Soluble Human ACE2

https://www.cell.com/cell/fulltext/S0092-8674(20)30399-8?rss=yes&fbclid=IwAR0j8wdLz_DY5O9pV_v6-F2g-AhGHlSguvofTjK6xVyxuoAJQBPsCabtf0I

“DPP-4 Inhibitors as Potential Candidates for Antihypertensive Therapy: Improving Vascular Inflammation and Assisting the Action of Traditional Antihypertensive Drugs”

“As a differentiation antigen on the surface of T cells, DPP-4/CD26 plays an important role in regulating the activation and chemotaxis of mononuclear-macrophages, NK cells, and T cells. DPP-4 inhibitors can regulate anti-inflammatory and anti-hypertensive effects by regulating the functions of these immune cells, especially T cells. We found that DPP-4i exhibits strong inhibitory effects on inflammation and oxidative stress,”

DPP-4 Inhibitors as Potential Candidates for Antihypertensive Therapy: Improving Vascular…
Dipeptidyl peptidase-4 (DPP-4) is an important protease that is widely expressed on the surface of human cells and…
www.frontiersin.org

“5 Natural ACE Inhibitors: Health Effects & Limitations”

“Please note: remember to speak with your physician before taking any supplements and let them know about all the supplements and over-the-counter drugs you are currently taking. They’re not meant to replace your medical treatment and may interact with certain drugs.”

5 Natural ACE Inhibitors: Health Effects & Limitations - SelfHacked
In recent years, scientists have found numerous natural compounds that potentially work like ACE inhibitors, a class of…
selfhacked.com

“High Blood Pressure and ACE Inhibitors”

“Angiotensin converting enzyme (ACE) inhibitors are high blood pressure drugs that widen or dilate the blood vessels to improve the amount of blood the heart pumps and to lower blood pressure. ACE inhibitors also increase blood flow, which helps to decrease the amount of work your heart has to do and can help protect your kidneys from the effects of hypertension and diabetes.”

High Blood Pressure and ACE Inhibitors
Angiotensin converting enzyme (ACE) inhibitors are high blood pressure drugs that widen or dilate the blood vessels to…
www.webmd.com

ACE Inhibitors (your number one ACE inhibitor is your ACE2, but if coronavirus ate your ACE2 then what are you going to do? Talk to your doctor first, don’t take the wrong one!)

“Patients who develop a cough from an ACE inhibitor need to ask their physician about angiotensin receptor blockers (ARBs). ACE inhibitors slow down the production of angiotensin II, while ARBs (as the name says) block the influence of angiotensin II by locking up cells’ receptors for it.”

ACE Inhibitors | Dr. Sinatra's HeartMD Institute

By Stephen T. Sinatra, M.D., F.A.C.C., F.A.C.N., C.N.S., C.B.T. Drugs in this class are lisinopril (Prinivil)…
heartmdinstitute.com

As late as April 26 we had an article that said

“We Still Don’t Know How the Coronavirus Is Killing Us”

We Still Don't Know How the Coronavirus Is Killing Us
We're committed to keeping our readers informed. We've removed our paywall from essential coronavirus news stories…
nymag.com

I think that at the root level it’s inflammation and oxidative stress that leads to organ failure, being unable to breath, having low blood oxygen levels etc. Remember to take all your vitamins, essential oils, omega3, vitamin C, vitamin D, D-ribose.

and Zinc

“Zn2+ Inhibits Coronavirus and Arterivirus RNA Polymerase Activity In Vitro and Zinc Ionophores Block the Replication of These Viruses in Cell Culture”

Zn2+ Inhibits Coronavirus and Arterivirus RNA Polymerase Activity In Vitro and Zinc Ionophores…
Author Summary Positive-stranded RNA (+RNA) viruses include many important pathogens. They have evolved a variety of…
journals.plos.org

Zn2+ Inhibits Coronavirus and Arterivirus RNA Polymerase Activity In Vitro and Zinc Ionophores…
Increasing the intracellular Zn 2+ concentration with zinc-ionophores like pyrithione (PT) can efficiently impair the…
www.ncbi.nlm.nih.gov

“D-Ribose for Fibromyalgia and Chronic Fatigue Syndrome”

“One small study published in The Journal of Alternative and Complementary Medicine concluded that d-ribose supplementation significantly improved symptoms of these conditions, including:”

A Type of Sugar to Treat Fibromyalgia & Chronic Fatigue Syndrome?
D-ribose is a supplement that's sometimes recommended as a treatment for people with fibromyalgia and chronic fatigue…
www.verywellhealth.com

“The use of D-ribose in chronic fatigue syndrome and fibromyalgia: a pilot study.”

“CONCLUSIONS: D-ribose significantly reduced clinical symptoms in patients suffering from fibromyalgia and chronic fatigue syndrome.”

The use of D-ribose in chronic fatigue syndrome and fibromyalgia: a pilot study.
OBJECTIVES: Fibromyalgia (FMS) and chronic fatigue syndrome (CFS) are debilitating syndromes that are often associated…
www.ncbi.nlm.nih.gov

“How Ribose Improves Your Daily Energy”

“A key molecule, called adenosine triphosphate (or ATP for short), is known as the energy currency of the cell because the amount of ATP we have in our tissues determines whether we will be fatigued, or will have the energy we need to live vital, active lives. Ribose provides the key building block of ATP, and the presence of ribose in the cell stimulates the metabolic pathway our bodies use to actually make this vital compound. If the cell does not have enough ribose, it cannot make ATP. So, when cells and tissues become energy starved, the availability of ribose is critical to energy recovery.”

EndFatigue
Ribose is a simple, five-carbon sugar that is found naturally in our bodies. But ribose is not like any other sugar…
secure.endfatigue.com

“An experimental peptide could block COVID-19”

An experimental peptide could block COVID-19
In hopes of developing a possible treatment for COVID-19, a team of MIT chemists has designed a drug candidate that…
medicalxpress.com

My belief is that D-Ribose, Vitamins C & D, Antioxidants, and Zinc could provide immediate relief for Coronavirus patients and that actually effective medicine should be on the way soon with the new emerging understanding of Sars-Cov-2.
End of Article.

About the author of this page: Micah Blumberg
I’m a neurohacker. I study this topic, neural lace, I have a group focused on it with 2,400 members. Its called Self Aware Networks: Computation Biology: Neural Lace and the idea is that your computational biology is rendering a volumetric video stream, a simulation, when your awake, and that we can tap into that with medical imaging technologies for two way data transmission, downloading what your eyes see, what your ears hear, and bringing AR VR like

experiences without glasses via direct brain stimulation. I also have a podcast called the Neural Lace Podcast and I hosted Neurotech SF meetups for two years where I led a team that brought eeg into Webxr. My latest project is a webxr magazine for a news channel I started called Silicon Valley Global News intended to be on the front lines of science and technology. I've been self studying biology and computer science related topics for 14 years or so I estimate. Example of my software https://twitter.com/worksalt/status/1214759820521177090?s=20

Tech demo video reel #2 how it works on Oculus Go

https://www.faceobok.com/worksalt/videos/3326241334069157/

Tech demo video reel #3 how it works on Oculus Quest

https://www.faceobok.com/worksalt/videos/3319097944783496/

Tech demo video reel #4 how it works on an Android Phone in AR mode.
https://www.faceobok.com/worksalt/videos/3338870806139543/

a0223z

May 21, 2018

https://medium.com/silicon-valley-global-news/3d-cross-hair-convolutional-neural-networks-5d39e2b565ca

3D Cross-Hair Convolutional Neural Networks
+ Holographic Medical Imagining Devices + Volumetric Video Rendering + Brain Machine Interfaces (NerveGear) + Deep Learning Artificial Intelligence.
The Neural Lace Journal by Micah Blumberg, Journalist, Researcher, Neurohaxor at http://vrma.io

One of the first steps to accomplish Neural Gear, Neural Lace, or the next generation Brain Machine Interface is that we need to correlate 3D volumes of data from the real world, such as data that an autonomous vehicle might capture, with 3D volumes of data from medical imaging, such as the holographic data that might be captured by Mary Lou Jepsen's Holographic Near Infrared Medical Imagining device called Openwater (I'm hoping to get a dev kit) that I mentioned previously here:

3 New Medical Imagining Technologies that have Neuroscientists salivating like Pavlov's dogs.
These three exciting new medical scanning technologies have neuroscientists dreaming about the prospects of next generation of medical…
medium.com

To get there not only do we need advances in Volumetric Data capture, rendering, and streaming. Reference: OTOY and the work of Jules Urbach.

My interview with Jules Urbach the CEO of OTOY at GTC 2018
We talked about some of the big ideas behind the big news about RTX Real Time Ray Tracing, we talked specifically about AI Lighting, AI…
medium.com

Join the Volumetric Video group here https://www.faceobok.com/groups/volumetric/

Volumetric Video VR AR Professionals: Point Cloud, 3D Mesh, Holograms
Volumetric Video VR AR Professionals is for Professionals who want to capture holograms of rooms or create 3D video that…
www.faceobok.com

We also need advances in basic brain machine interfaces such as in how to read and write to the brain.

Neural Lace and Deep Learning
Meet Polina Anikeeva, Associate Professor of Materials Science and Engineering at Massachusetts Institute of Technology, and an important…
medium.com

On top of that we need innovations in Deep Learning Artificial Neural Networks to identify and segment brain activity that directly correlates to patterns in the real world that have been captured and streamed by robots (autonomous vehicles)

The conclusion from a new paper presented at Nvidia's GPU Technology Conference GTC 2018 is that 3D Convolutional Neural Network Cross Hair Filters are effective for use with 3D volumes of data and you get an immediate 23% gain in memory that will allow you to do things like increase your batch size, process larger 3D volumes, build deeper networks, or run at the same level of performance on cheaper hardware.
A 23% gain in the depth of the network could be significant for example because the trend in computer vision, via ImageNet, is that top error rates have been decreasing inversely to the depth of the network

The paper the talk was based on is titled "3D CNNS with Fast and Memory efficient Cross-hair Filters" was submitted to GTC by Giles Tetteh, a PhD Candidate from the Image Based Biomedical Group, Graduate School of Bioengineering, Techniskche Universität München

The Image-Based Biomedical Modeling group led by Prof. Menze works on extracting information from medical images. From image acquisition (MRI / CT/ PET) to Structuring Visual Information (detection and segmentation) to empirical correlations and diagnostic to functional models (for diseases). Convolutional Neural Networks are used to do detection and segmentation of objects in the 3D volume of medical data.

When you first learn about Convolutional Neural Networks, they are used to classify 2D images, an example is the Hotdog / Not Hotdog app featured on the hit tv show Silicon Valley.

Originally, before Hotdog no hotdog it was Cat vs Dog, can your CNN detect whether its looking at a cat verses a dog? That's classification.

After that we had classication with localization, and then object detection, that we could see with Nvidia Driveworks in 2016

An article about Deep Learning that I wrote in 2016

Deep Learning Fuels Nvidia: Self-Driving Car Technology
Deep Learning Fuels Nvidia: Self-Driving Car Technology Posted at Radical Science News on January 27, 2016 by Adam…
vrmadotwork.wordpress.com

More recently advances have allowed Convolutional Neural Networks to do semantic segmentation which sort of means giving a label to each pixel or voxel or point in a pointcloud in an image or a volumetric video. So you can identify the actual spatial volume of a cat and make that distinct from a wall.

When you are dealing with self driving cars and medical imaging one of the biggest challenges is that spatial data from the real world is 3D. We often have three dimensional data and very large volumes of it.

If you try to use a 3D CNN with 3D data you are immediately going to see your memory consumed (parameters required) and computation price increase (processing more parameters takes more computation time and thus is increases your computational cost)

Currently the Medical Community and the Self Driving Car community have been experimenting with 2.5D networks, which means any combination of a 2D convolutional neural network with a 3D volume of image data.

That might mean running CNNs on 2D slices of 3D data into one 2D CNN and then use smart processing to put the slices together after.

The main setbacks of that approach is that there is still a lack of 3D contextual information and a lot of redundant computation ends up being done which is computationally expensive.

A Classical 3D Convolutional Neural Network (as explained by the proposal by Giles Tettech to replace 3D Convolutions with cross hair filter) allows you to define a volume of space, like a box, which you use as a 3D filter that you swipe through a 3D volume that represents your data, then you do a voxel wise multiplication of the weights of the filter with the image, then you assign the sum of all the weights of the multiplication of the image with the filter to the center voxel. So you have a 3D volume as an input and a 3D volume as an output. If you have an isotopic filter represented as linear size k then you need to define K to the third, and you have about 2 times K to the third parameters to do.

The New 3D Cross Hair Convolutional Neural Networks (as explained by The Proposal from Giles Tettech is to replace 3D Convolutions with cross-hair filters.) are different in that now you only need to define three 2D cross hair filters, each one is a plane that represents either an X, Y, or Z axis. Then you assign to the central voxel the sum of the result of the three convolutions, and then you can swipe that through the whole volume. You need to define the number of parameters as 3k to the second, and the number of elementary operations is about 6k to the second.

The result recovers quadratic scaling, reduces the number of parameters needed, recovering memory and reducing computation time.

To prove that it works first they tried it on MNIST which is a 2D data set and they noticed a twenty percent improvement in speed with an acceptable error rate proving that it can handle 2D planes. Cross Hair filters can catch most of the relevant information needed to classify two dimensional images.

To test it’s performance on 3D data they used the 3D U-Net — V-Net which is the most used architecture for medical vision to do segmentation. It’s known as U-Net or V -Net because it has a down sampling pass and an upsampling pass which skip connections, and the point is that you have an output which is the exact same 3D volume size as the input. So if you replace the 3D convolutional blocks of this architecture for a volume of 128x128x128 then you end up reducing the number of parameters needed by 40 percent so you have basically a 40 percent gain in memory which is immediately significant.

They further tested it on other data sets including MRI, SRXTM and a Synthetic Data set with very little loss in accuracy compared to 3D CNNS, but with a gain of at least 23% in computation speed thanks to Cross Hair filters.

Watch the full talk given at GTC 2018 here:
http://on-demand.gputechconf.com/gtc/2018/video/S8318/

The talk was given by Marie Piraud—Senior Researcher, Technical University of Munich on behalf of Giles Tetteh (PhD Candidate from the Image Based Biomedical Group, Graduate School of Bioengineering, Techniskche Universität München)

“Over the years, state-of-the-art architectures have been built with convolutional layers and have been employed successfully on 2D image processing and classification tasks. This success naturally appeals for the extension of the 2D convolutional layers to 3D convolutional layers to handle higher dimensional tasks in the form of video and 3D volume processing. However, this extension comes with an exponential increase in the number of computations and parameters in each convolutional layer. Due to these problems, 2D convolutional layers are still widely used to handle 3D images, which suffer from 3D context information. In view of this, we’ll present a 3D fully convolutional neural network (FCNN) with 2D orthogonal cross-hair filters that makes use of 3D context information, avoiding the exponential scaling described above. By replacing 3D filters with 2D orthogonal cross-hair filters, we achieve over 20% improvement in execution time and 40% reduction in the overall number of parameters while accuracy is preserved.”

a0224z
old note from 2013
Micah Blumberg
quantum mechanics are involved in every physical interaction, but that does not make it an obvious solution to a "metaphysical mind" as you put it. I think the information that makes up the human experience consists of synchronizing coincidence patterns in the higher phasic gamma frequencies and inhibiting decoherence patterns disrupting the lower frequency tonic firing of the aware mind. Yes this process involves electric-chemical interactions, but the quantum mechanic may be as mechanical in the brain as a drive shaft is in a car, no reason at this point to assume the drive shaft is conscious.
9 hours ago · Edited · Like

Chase
i do not believe that the interactions themselves are conscious, merely that they on top of those conventionally considered provide for the possibility for enough information to be processed by such a system that classical mechanics can not account for alone.
your theory is solid and actually reinforces what im really trying to get at, we can measure these patterns of synchronizing and decoherence through applying quantum phenomena
9 hours ago via mobile · Unlike · 1

Chase
also those are just some possibilities ive considered that could be used as a starting point for beginning to understand how such metaphysical phenomena could arise from a physical system, they arent things that i am saying are necessarily true
9 hours ago via mobile · Like

Micah Blumberg
Well on the one hand I am saying that metaphysics is information and information in the brain is tempo-spatial coincidence detection, but on the other hand quantum mechanics may be essential to the brains metaphysical calculation because the phasic disruptive bursting of high frequency gamma waves contrasting with the tonic regularity of lower frequency waves may be a literal metaphysical expression as scattering amplitudes, so if you compare the high hz phasic Gamma with spherical waves, and the low hz tonic with plain waves, you might be able to use something like the amplituhedron to calculate the metaphysic state.
http://en.wikipedia.org/wiki/Scattering_amplitude
Chase
how would you say that brainwave patterns are actually related to the thoughts or conscious states associated with them and how are they associated? like representations of your conscious perspective of logical activity? emotional activity? both?
about a minute ago

Micah
my hypothesis is that brainwaves are the residual after effects of the thought process, electromagnetic brainwave activity is perhaps like blood activity in the brain, dissipating energy and heat. It gives us a window into what was being thought, it serves as an indicator, as it can be read by EEG (and blood can be read by FMRI)

a0225z
Note created Nov 6, 2012
(LTP, dendrite, vector)
Micah Blumberg
whether I know what it is or not depends on the context in which you mean it.
If we are talking about artificial internal representation, I think no one is doing that yet, I think statistic driven machine learning from Bayesian networks is simulating LTP, but not internal representation.
38 minutes ago · Edited · Like

Victor Smirnov No, we are talking about Monica's oversimplified folk psychology.

Unlike dogs, humans use symbolic language for Externalization and Internalization of experience. And that process goes mostly unconsciously. That is well-known fact in the Psychology.
37 minutes ago · Like

Micah Blumberg I think we are going to eventually replace psychology with neurophysics, sorry but it's a dying relic of old thinking. The 1970's called and they want their psychology back.
35 minutes ago · Like

Micah Blumberg If you have the concept of an apple, and that concept is a neuron (and or dendrite) which is a vertex with vectors to other vertex's (Neurons and or dendrites) establishing a specific syncing pattern in a network that has reacted to apple, and associations with apple, and now activates with this established vertexs + vectors synching pattern when any part of vertex network is triggered, then you have a concept in a brain, a symbol, there is no reason why dogs brain would not make a concept in exactly the same way as a human's brain. The dog doesn't have the whole you inside it's brain, it has a conceptual representation of you, a symbol, that is a token of meaning, or a conditioned vertex syncing pattern.
25 minutes ago · Edited · Like · 1

Micah Blumberg This is why psychology has to go, and neurophysics has to replace it.
24 minutes ago · Like

Micah Blumberg For a brain, there is no difference between a symbol and a color, at least not initially. The difference between symbol's and colors develops when more brainwaves come, so that conditions new vectors to create an association link between vertex's, so they are more likely to fire together.
15 minutes ago · Edited · Like

Francisco Boni Neto
I don't think Monica oversimplifies the theory with mundane psychologism. The standard formalization of the notion of patterns in the real world, from several levels of complexity (chemistry laws, biological laws) up to the most basic ones (physics) — a task that is accomplished with conscious manipulation of symbols — cannot help agents to achieve intelligent behavior alone. If you implement those laws from top-down hierarchy, they will fail to replicate intelligent behavior because they generate simplified models of the world. This doesn't mean that the laws above don't capture any revelant regularity in the world. It just means that these laws expressed symbollicaly are not the general laws (do they exist?) that solve the grounding problem: http://en.wikipedia.org/wiki/Symbol_grounding

The Symbol Grounding Problem is related to the problem of howwords(symbols) get their meanings, and hence to the problem of what meaning itself really is. The problem of meaning is in turn related to the problem ofconsciousness, or how it is thatmental statesare meaningful. According to a widely held t...
16 minutes ago · Unlike · 1

Micah Blumberg
I don't believe in some mystical consciousness sauce that is directing the manipulation of symbols inside anyone's mind. In other words, when we think we are rearranging symbols in our

minds, it's really a bunch of cellular reactions happening, there is a narrative belief that says the doer of all this is you, but the narrative is physics driven.
9 minutes ago · Like

Micah Blumberg
If you gave a dog a bigger brain, hands, and human class vocal cords, it would do things that people do.
7 minutes ago · Edited · Like · 1

Francisco Boni Neto
And a dog with a bigger than human brain would create dog-cyborgs with superdog abilities that, in turn, would modify it's own source code to create greater-than-superdog abilities which would result in a dog singularity?
6 minutes ago · Unlike · 1

Micah Blumberg lol yes I guess so haha

However I would like to think that dog's would remember that man is their best friend, and make human cyborgs, and then dog cyborgs and human cyborgs could turn all the species on earth into cyborgs together. :)

Commercial for "AGI-Extenda-Brains, a simple non-invasive external brain you can wear that gives you 200,000 times the awareness and brain power you had before. Great for Dogs, Cats, Babies, and even Dolphins. Get yours today. Only 99 IC"

a0226z
(perception, field)
hameroff was too ambitious, these are more recent papers on magnetic fields / memory / consciousness based on more refined models.
20 hours ago · Unlike · 1

Felix Lanzalaco Columnar EEG magnetic influences on molecular development of short-term memory.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5VlZJb1czM1RTTEk

AstrocytesandhumancognitionModelinginformationintegrationand.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5LVBITGF0aWFoUFE

Columnar electromagnetic influences on short-term memory at multiple scales.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5YVRva092Yy1HYms

Biophysical Mechanisms Supporting Conscious Perception.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5NWNhVGRVUENjbEU

Evolution and possible storage of information in a magnetite system.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5enF0ejl5OTlnaEU

Are the astrocytes involved in magnetite-based memory.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5VVRhTmxmMjMyUnc

Long-term memory in brain magnetite.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5YVRmSzJDdDZieHM

Are the instinct storage magnetic-based in the neurons.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5cHhLS2ZBbTVaZU0

Neuromagnetic dialogue between neuronal minicolumns and astroglial.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5M2E4a2dVcmYxWEk

Architectural organisation of neuronal magnetic fields.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5VWlNNy1nUk9sWDA

Information storing by biomagnetites.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5SkEtbkNVMFo3Y2c

Statistical mechanics of neocortical interactions.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5bmVFd3J2Nm8zTjQ

Neocortical Dynamics at Multiple Scales.pdf

https://docs.google.com/open?id=0B_wcM5ZfmEE5Z1Q3cFp1ZTVLVU0
Columnar EEG magnetic influences on molecular development of short-term memory.pdf - Google Docs
docs.google.com

a0227z

May 19, 2018

https://medium.com/silicon-valley-global-news/neural-lace-and-deep-learning-6ed70db4e3a7

Neural Lace and Deep Learning
Meet Polina Anikeeva, Associate Professor of Materials Science and Engineering at Massachusetts Institute of Technology, and an important figure in the early history of Nerve Gear and it's pioneers.
The Neural Lace Journal is written by Micah Blumberg, who is the host of the Neural Lace Podcast at http://vrma.io

In 2018 Polina Anikeeva won the 2018 Vilcek Prize for Creative Promise in Biomedical Science

Anikeeva explains that the electronics inside your body are very different from semi-conductor materials, they are soft, squishy, (Humans are metal robots but thats another topic) and so she asks herself a great question 'how do you actually connect the two in a way that is meaningful and organic?'

Associate Professor Anikeeva's lab at MIT develops devices that interface with the nervous system. She spends a lot of time thinking about how to interact with the nervous system without an invasive implant, and she has created multiple brain machine interfaces that you should know about which brings us to her 2015 Tedx Talk.

"Rethinking the Brain Machine Interface" by Polina Anikeeva. It was Published on youtube on Jul 9th, 2015. Interesting in the video the talk was also called: "Polina Anikeeva "Blurring the Boundaries between the Brain and Machines""

At the 12:30 minute mark Anikeeva asks "Can we interact with the brain wirelessly and remotely? How can we do that?" Her ability to ask herself great questions and then try to answer these very same questions herself seems to be a trend in all the videos that I watched featuring her.

Annikeeva states that the objective is to try to control the voltages on neurons, and that those voltages are controlled by concentrations of ions inside and outside of neurons.

I think the obvious question here is well what about the synapse? What about dendritic computation, how are we going to monitor and understand what's going on at that level? She does not address that particular topic in the videos I selected for this article but she does

mention that trying to map what ‘all' the synapses are doing is going to take a lot more time than trying to accomplish the goal of establishing organic communication at the neuronal level with machines.

Annikeeva says that if we can control the concentrations of ions we can control the brain. In the Neural Lace Podcast Episode 4 with Andre Watson

In the Neural Lace Podcast I shared a hypothesis that occurred to me while reading the work of a different scientist that Neural Circuits operated because of electromagnetism, and that lowest negative charge in the dendrite essentially placed an order for the arrival of the next surge in electrical activity along the neural circuit, and this would happen because of changes in the distribution of positive and negative ions in the dendrite but also in the cell body originating from the dendrite.

Annikeeva says that “if we can control the concentrations of ions we can control the brain.”
So the moment that Annikeeva said that I was a fan of her work, Annikeeva went on to say that neurons ion channels react the same to heat as they do to Capsaicin, that it’s like hitting the fire alarm.

That’s a really excellent insight, but why not try to heat the cells with intensely focused ultrasound, I hope to ask her?

Her lab can synthesize magnetic nano particles, 1/5000 of a hair, dissolved in water, form a fluid that looks like expresso, and then they inject that fluid into the part of the brain to target some but not all of the cells.

Before the video is over she shows a video of completely wireless magnetic brain stimulation.

At about 18:07 She asks what can we do, what should we do?

With NerveGear or Neural Lace we can connect artificial limbs to the nervous system, repair spinal cords, create new treatments for parkinsons and depression, and at some point we can plug into VR and AR directly, and or plug into AI Deep Learning directly.

Then I watched another talk by Polina Anikeeva called “Why you shouldn’t upload your brain to a computer.” It’s highly recommended:

Anikeeva offers the question “When can my brain collaborate with a computer” as better than asking ‘when can I upload my brain?’

Now I learn that she has a name for her magnet dust, she calls them Nanotransducers and they are 20 thousand times smaller than individual coffee grinds. 1/20,000 size to a coffee ground. They can be mixed into IV solution and injected into brain cells just like a drug. There they can receive signals from outside electronics and convert those signals into something that triggers the brain to react.

Her lab has been trying for years to make devices that can both record from neurons and transmit their signals to outside electronics.

At around 9:45 Anikeeva makes the point that Deep Learning Neural Networks are developing much more quickly than hardware interfaces to neurons and she estimates that it will be a missed opportunity to not be able to take advantage of artificial intelligence as a specialist plug-in to your generalist brain. Then she makes the point that this type of connective future, between specialist AI and your generalist brain is likely to happen much sooner than trying to develop a comprehensive understanding of every synapse in your brain.

She asks how can we get to a time when [her vision of attaching specialist AI to the generalist brain exists]. At 11:45 she explains why AI has developed so quickly compared to Brain Machine Interfaces.

“The lightning fast development of artificial intelligence is powered by ubiquitous computing, it’s accessible to many and it’s very democratic.

“Development of Neural Lace Hardware on the other hand requires significant infrastructure, training and investment. It always requires a paradigm shift from machine inspired electronics, to biology driven design of new materials and architectures.

“And we cannot simply outsource this task to a handful of academic labs. It will simply take too long, we already took 30 years, if we take another 30 we will be missing an opportunity to gain a collaborator and a partner in artificial intelligence.”

She then concludes with inspiring words:

“So let's join forces in Academy, Industry, and Government to accelerate the development and deployment of a neural interface, such that our generalist human can collaborate with specialist artificial intelligence to do what it does best create, analyze, and decide.”

What I've said about Associate Professor Anikeeva's work doesn't even scratch the surface of the details you can find in her papers, I have not even mentioned her work in Optogenetics for example, for a more technical deep dive into her work with references to some of the papers she has worked on watch this video below.

Thanks for reading, I hope that I get to interview Polina Anikeeva for the Neural Lace Podcast someday!

a0228z

Mar 4, 2018

https://medium.com/silicon-valley-global-news/3-new-medical-imagining-technologies-that-have-neuroscientists-salivating-over-like-pavlovs-dogs-de407ec7822c

3 New Medical Imagining Technologies that have Neuroscientists salivating like Pavlov's dogs.
These three exciting new medical scanning technologies have neuroscientists dreaming about the prospects of next generation of medical imaging that is better, cheaper, more affordable, and more accessible to researchers worldwide than existing medical imaging technologies.
Article by Micah Blumberg, Neurohaxor, Organizer of NeurotechSF, and host of the Neural Lace Podcast http://neurotechx.com/

1. The first is Openwater by Mary Lou Jepson

Openwater may or may not involve Holography, Lightfields, some variant of Tractography (the technology umbrella that includes Diffusion Tensor Imaging), and Geometric Neural Networking Analytics. Some Neuroscientists are speculating that Openwater's NIR Holographic technology is similar to another technology which you can read about called OpenNirs at opennirs.org

Openwater Reference: "Wearable scanners will be able to read our minds"
https://www.ft.com/content/bfd733b0-e501-11e7-a685-5634466a6915

Wearable scanners will be able to read our minds
This year, a San Francisco-based start-up hopes to demonstrate a scanning device that could revolutionise the diagnosis…
www.ft.com

Also Read: Why Mary Lou Jepsen left faceobok: To transform Healthcare and Invent Consumer Telepathy

https://spectrum.ieee.org/the-human-os/biomedical/imaging/why-mary-lou-jepsen-left-faceobok-to-transform-heath-care-and-invent-consumer-telepathy

Why Mary Lou Jepsen Left faceobok: To Transform Health Care and Invent Consumer Telepathy
Mary Lou Jepsen has done well for herself in the tech industry. Most recently she was an engineering executive at…
spectrum.ieee.org

My questions: Why is Mary Lou's tech holographic? Is it like Tractography?

How similar is it to OpenNIRS and is OpenNirs also holographic or is that the big difference between OpenNirs and OpenWater? Opennirs.org

OpenNIRS.org
Welcome to the openNIRS.org website - here you will find documentation and files for open Near InfraRed-Spectroscopy…
opennirs.org

2. The second is Furaxa microwave imaging Joel Libove.

Furaxa

http://www.furaxa.com/

Furaxa - Microwave Sampler/Pulsers, PCI Synthesizers, PCIe Bus Extenders
High Speed Data Acquisition (DAQ) Cards, PCI / PCIe Bus Extenders and Custom Systems
www.furaxa.com

Read Furaxa Paper:

http://ewh.ieee.org/r5/denver/apmtt/files/talk/34522.pdf

3. The third is Open Electrical Impedance Tomography

"Low Cost Non-Invasive Biomedical Imaging

An Open Electrical Impedance Tomography Project"

https://media.ccc.de/v/34c3-8948-low_cost_non-invasive_biomedical_imaging

Low Cost Non-Invasive Biomedical Imaging
An open source biomedical imaging project using electrical impedance tomography. Imagine a world where medical imaging…
media.ccc.de

OpenEIT

Can we apply the principle of Holography or Tractography to OpenEIT?

Read Electrical impedance tomography

https://en.m.wikipedia.org/wiki/Electrical_impedance_tomography

Electrical impedance tomography - Wikipedia
Electrical impedance tomography (EIT) is a noninvasive type of medical imaging in which the electrical conductivity,…
en.m.wikipedia.org

Pavlov Dog Reference in the title:

https://www.simplypsychology.org/pavlov.html

Pavlov's Dogs | Simply Psychology
Pavlov and his studies of classical conditioning have become famous since his early work between 1890-1930. Classical…
www.simplypsychology.org

Opinion: AR VR Headsets can also be considered a new form of Brain Computer Interface, lets get these new Medical Sensing Technologies embedded in future AR VR headset designs.

End of story.

Previous story: This is my opinion on how Qualcomm could improve their XR Headset Reference Design. What's your opinion? If you could design the ultimate mobile all in one AR/VR headset what would that look like, what features would it have?

a0229z
created Sept 2011

Neo cortical stimulation to free your mind

I am not promoting brainwave technology in the conventional sense, like with regard to holosync from centerpointe. Brain Optimization is new and it incorporates a combination of neurofeedback + brainwave entrainment with light and sound to adjust the entrainment to match the users brainwave patterns. It's much better than traditional brainwave entrainment alone. It's much better than traditional neurofeedback alone.

neurofeedback

a0230z
neo mind cycle 2 (electromagnetism, synap, metaverse, oscillat, field)
So imagine it starts in 2012 with neo mind cycle

goes through discussion of a ton of bci interfaces

ends talking about AR and VR mixed reality combining with AI neural rendering

my interpretation of my kundalini awakening was like seeing the whole capacity of my mind as like a lake of electromagnetism, this has been somewhat depicted in art by many others

but etched in the phase field are layers of the same images scaled to different resolutions, projected from synapses onto oscillations

I'm arguing that https://doi.org/10.1021/ja00093a003

plus my thoughts on the metaverse
touching on Tony Parisi's 7 laws of the metaverse

Oculus Quest 4 with a discreet TPU, all the existing games look better, their resolutions upscaled with neural rendering, the tracking perfected

so imagine that

I think what if

poll: do you see the world heading towards a global climate apocalypse yes or no? If yes

do you see that all people in sum, a sum that includes all, but especially all the current leaders of the world, that in summary everyone is doing a bad job right now, do you agree that collectively the world is heading to a climate triggered natural disaster apocalyse?

a0231z

(oscillat, cortex)

neo mind cycle dream
(In part because of this dream I named my company neo mind cycle, and I dedicated my life to solving three problems

1. neural lace aka nerve gear aka the ultimate brain computer interface.

2. artificial cortex to expand the human mind into the computer

3. sentient artificial brains.

9 years later I'm writing a book that is a small summary of the things I have learned so far. I believe that this book is a major step towards accomplishing the 3 goals that I have dedicted my life to solving.

Neo Mind is a reference to the Neo Cortex (The name was also inspired by both Numenta & The Matrix film series), and Cycle is a reference to oscillations and my dream below.

there were two presenters (referenced in note b0067y)
The dream begins below :)))

Two scientists each took a took a turn to present two proundly different ways to see consciousness.
1. The first explained human phenominological consciousness as brain activity that cycles between four brain areas. Once it starts it continues to cycle in the four outer regions of the mind like a car wash, it stays out of the center, it only operates around the center as one continuous flow, once it starts up it keeps going
he showed a twelve point circle with a thirteenth opening, a red triangle opening to 12 or more closed (14?) triangles
2. the second said showed an object to which there was something continually being added to, like a limited supply of plastic or vhs tape that was going to run out. instead of like a carwash this was like an animal running, and the supply was like plastic, or it's molten material
the art with the heart that is like molten plastic the material coming to it is the stream of time, there was some material streaming from it

its like the flow in a washer machine, with a continous input from a temporary source that constantly reshapes this shape shifting flow

its a shape shifting flow that cycles around a center
a high dimensional loop (attractor)

the somewhat tragic conclusion was that for every conscious entity the tape of morphing plastic consciousness was temporary, it was already know to be something with a fixed end, unto the conscious being itself, its own end point was either known or knowable.

because its end was in the very shape (configuration) of the machine itself (a vortex dissipates over time)

(this dream was from many years ago but looking back on it now I am thinking the four areas could represent the macro flow of phase changes from the incoming senses through the thalamus to the Frontal, Parietal, Occipital and Temporal lobes, and from the thalamus to the hippocampus-enthorhinal loop, and then all of this sensory data spreading across the entire brain, like waves rippling in a pond, back to the thalamus again as the peak of the neo-cortex, and also down (and up) the brain stem to control the muscles of your entire body. I think this old dream was inspired by my mesculine experience of sensing my voice as something that different cells were contributing along some corridor, channel, tube, or, path, with each interval of distance a new cell firing to create the next sound of my voice. This led to my quest to understand how information flowed through the brain, cumulating in my conversation years later with F Scott about the path or flow of information in the brain, and then leading to the book Self Aware Networks.)

a0232z

depression, ATP, Brainwave, slow brainwaves will generate less ATP, and diseased mitochondria will generate less ATP, so feeling bad could be an early warning sign for depression, and inflammation could be a sign of mitochondrial damage
slow learning also from depression because
this is because the rate of firing, and resetting after firing is intimately connected with mitochondrial production of ATP

(graph, LTD, oscillat, neuralink, criteria, causation, ATP) Neuralink Numenta Neurophysics NerveGear Happy Hour

About text http://simp.ly/publish/NLtdNK

6pm to Midnight PST tonight April 26th, 2021

Clubhouse link https://www.joinclubhouse.com/event/PAdk7w1R

Join this group to continue the discussion and hear about future events, and https://www.faceobok.com/groups/IFLNeuro/?ref=share

Primary Topics
Brain Rhythms, Brain Oscillations, Brainwaves, Vibrations, Cortical Column Network Protocols, Reference Frames, Dipoles, Neuron Electric Gradients, Neural Circuits, Microcolumns, Dendritic

Computation, NDMA spikes, LTP, LTD, New Protein Synthesis, Neural Correlates of short term memory, MVR Multi-Vesicular Release, Novel New Neural Network Architectures.

Prinary Industry Topics
Share news about & discuss companies like Neuralink, Numenta, Openwater.cc, Kernel, and similar companies.

Primary Medtech Topics
Share published science papers, or articles that include references to research papers, and discuss medical imaging at all scales with all devices, medtech, microbiology research, cognitive neuroscience, psychophysics, and also papers on deep learning applied to medical imagine, novel new studes on fMRI, DTI, EEG, EIT, HD-DOT, Laser Doppler with Holography, Laser fNIRS with Holography & Ultrasound, MEG, DBS, Utah Arrah, and other medical imaging technologies, especially novel combinations of technology.

Primary Disease Topics
Discuss the microbiology of disease topics: Alzheimers, Parkinsons, Huntingtons disease. Depression, Psychoactive medication for depression: LSD, DMT, Psilocybin
TMS, TDCS, Infrared Light Stimulation, Inflammation, ATP, Ribosome, DNA, RNA, Cancer, Immunology, Car T Cells research.

tcells immune pain lief
https://jonlieffmd.com/blog/chronic-pain-is-a-result-of-conversation-by-immune-and-brain-cells

tcell cancer paper
"Single-cell analyses define a continuum of cell state and composition changes in the malignant transformation of polyps to colorectal cancer"
https://www.nature.com/articles/s41588-022-01088-x

On the topic of cancer research
Mitochondrial RNA modifications shape metabolic plasticity in metastasis
https://www.nature.com/articles/s41586-022-04898-5

immune related
"Scientists identify a protein key to inhibiting replication of the flu virus"
https://phys.org/news/2022-06-scientists-protein-key-inhibiting-replication.amp

TMS Research
"Dosing Transcranial Magnetic Stimulation of the Primary Motor and Dorsolateral Prefrontal Cortices With Multi-Scale Modeling"
https://www.frontiersin.org/articles/10.3389/fnins.2022.929814/full

"Cell by cell, scientists are building a high-resolution map of brain changes in Alzheimer's disease
A massive dataset of 1.2M brain cells shines a light on disease's cellular roots"
https://alleninstitute.org/what-we-do/brain-science/news-press/press-releases/scientists-map-brain-changes-alzheimers-disease-cell-cell?fbclid=IwAR0HWadrhClXGQEnEbWjEtlBysPEQMfviqtR7Ago8wL4S6UoDQbW9DU3Rvo

Primary History Topics
History of neuroscience, cognitive science, neuropsychology, psychophysics, neurology, brain surgery, medicine, artificial neural networks and more.

Share, discuss, arrange online meetings (Clubhouse, Discord audio, Twitter Spaces)
Invite interesting scientists & engineers to speak. Share science papers & articles about papers that have been published in a scientific journal.

If the paper you want to share is behind a paywall please fetch a version of it from Sci Hub so that it is free for our groups members to read it.

Read the wikipedia article on Neurophysics https://en.m.wikipedia.org/wiki/Neurophysics

Read books like
Rhythms of the Brain by György Buzsáki
The Brain from inside out by György Buzsáki
A Thousand Brains by Jeff Hawkins
On Intelligence by Jeff Hawkins
The Neural Basis of Freewill: Criterial Causation by Peter Tse
Networks of the Brain by Olaf Sporns
Connectome by Sebastian Seung

Other interesting books:
The Inflamed Brain by Edward Bullmore
The man who mistook his wife for a hat by Oliver Sacks
Vehicles: Experiments in Synthetic Biology by Valentino Braitenberg
Soul Dust by Nicholas Humphrey
The Deep History of Ourselves by Joseph LeDoux
Mind Fixers by Anne Harrington

Please suggest books and send pdfs of books to be uploaded to this groups files.

Great Science Fiction Stories about brain computer interfaces and artificial cognition.
http://simp.ly/publish/Qw50NS

Learn about the group history and dedication
This group is dedicated to our fellow admin & co-founder Angela Ronson 1970-2021

http://simp.ly/publish/Cdf2Bj

a0233z

(tomography, oscillat, cereb) Neurophysics NerveGear Happy Hour Vibrations & Oscillations

Brain Rhythms: Functional Brain Networks Mediated by Oscillatory Neural Coupling
47,917 views•Jun 19, 2014
https://www.youtube.com/watch?v=OCpYdSN_kts

ceribell.com is an EEG headband for point of care use, by nurses,

electrical engineering Oklahoma, robotic surgery,

non-invasive
optical coherence tomography uses sound to non-

Mary Lou Jepsen, could get high resolution fnirs, and ultrasound, like a hat or beanie, fine spatial resolution because of how many pixels you can get, using LCD technology,

Sean helped to launch a company that used laser light and doppler to image brain bloodflow

A neuron that first uses more gluclose and oxygen which requires more bloodflow

fmri takes advantage of

laser doppler can get almost instantenous signal changes

therapy
tms
tdcs therapy
if we pass electrical current, it stimulates neuronal activity

neuroplasticity

cerebral entertainment
rehabilitation conversations infrared or near infrared light to stimulate the light with auditor stimulation
you can hack their system to create neural excitability

MEG, a setup that combines MRI with EEG

Checkout the eternal sunshine of the spotless mind
brainsway or best of brain for transcranial magnetic stimulation

neurostar

are people losing memories with tms, inducing seizures,

depolarizing

TMS horror stories, electroconvulsive therapy vs tms vs tdcs
https://www.madinamerica.com/2020/04/tms-damaged-my-brain/

"Efficacy and safety of HD-tDCS and respiratory rehabilitation for critically ill patients with COVID-19 The HD-RECOVERY randomized clinical trial"
https://pubmed.ncbi.nlm.nih.gov/35568312/

ventricals are full of cerebral spinal fluid, its where cerebral spinal fluid is made

ways to stimulate the brain
music
brainwave entrainment
tdcs
tms
psychedelic medication

NAC
protandim
glutathione peroxidase - related to
one increases

"Hydrogen peroxide acts as both vasodilator and vasoconstrictor in the control of perfused mouse mesenteric resistance arteries"
https://www.researchgate.net/publication/8016021_Hydrogen_peroxide_acts_as_both_vasodilator_and_vasoconstrictor_in_the_control_of_perfused_mouse_mesenteric_resistance_arteries

naph and reactive oxigent species

glutathione

my question and hypothesis is why inflammation can lead to so many different types of illness

including with covid-19
parkinsons new protein synthesis?
alzheimers

"Scientists Find New Way To Clear Toxic Waste From Brain (Sci Tech Daily)"
"Sapkota though that increasing the amount of long aquaporin 4 might increase waste clearance. Therefore, he screened 2,560 compounds for the ability to increase readthrough of the aquaporin 4 gene. He found two: apigenin, a dietary flavone found in chamomile, parsley, onions, and other edible plants; and sulphaquinoxaline, a veterinary antibiotic used in the meat and poultry industries."
Reference: “Aqp4 stop codon readthrough facilitates amyloid-β clearance from the brain” by Darshan Sapkota, Colin Florian, Brookelyn M Doherty, Kelli M White, Kate M Reardon, Xia Ge, Joel R Garbow, Carla M Yuede, John R Cirrito and Joseph D Dougherty, 24 August 2022, Brain.
DOI: 10.1093/brain/awac199

"Brain stimulation leads to long-lasting improvements in memory"
The team is also expanding the work and looking at whether tACS can help people with conditions such Alzheimer’s disease, he adds, given that the study indicated that brain stimulation might provide the greatest benefits to those who have poor cognitive function to begin with. “We’re hoping that we can extend upon this work in meaningful ways and contribute more information about how the brain works.”
doi: https://doi.org/10.1038/d41586-022-02298-3
https://www.nature.com/articles/d41586-022-02298-3
https://scitechdaily.com/scientists-find-new-way-to-clear-toxic-waste-from-brain/

a failure of synthesis of ribosomes
the endo
the ribosome is really important for decoding genetic information to create new proteins
fatigue or failure

high levels of ghrelin
steroids are the big guns for trea

amlyoid beta and tau protein

insufficient clearance

Ribosomal protein s15 phosphorylation mediates LRRK2 neurodegeneration in Parkinson's disease
https://pubmed.ncbi.nlm.nih.gov/24725412/

sugar is damaging the ribosomes, sugar could be one of the major causes of alzheims

type 3 diabetes of the brain

The Glymphatic System: A Beginner's Guide
https://pubmed.ncbi.nlm.nih.gov/25947369/

the lack of nitric oxide is causing the constriction of blood vessels which contributes to the aging of cells

a0234z
(graph, oscillat, field, observer, ATP) Neurohacking & NerveGear
A novel definition of life and its implications to cybernetic systems
by Planetary Science Institute

https://phys.org/news/2021-08-definition-life-implications-cybernetic.html

a neuron as a muscle that collects salty ions (and ATP), and spits them out again

A novel definition of life and its implications to cybernetic systems
A sample of self-organization mathematically generated by iteration of a simple feedback equation. Self-organization has been observed in a variety of biological processes, such as DNA condensation into chromosomes. Credit: O. Abramov, Planetary Science Institute
Perhaps the most fundamental puzzle in biology—"What is life?"—is addressed in a new paper by Planetary Science Institute Senior Scientist Oleg Abramov.

The neuron's interaction with the lightfield, this would be a proton hitting a protein on a ganglia neuron triggering an electro-magnetic-mechanical-chemical response.

The phase pattern is defined as a frequency rate over two points in space.

Or the rate at which a signal travels,
what if the frequency of a particle is inverted to its amplitude effect on space? a slow particle would have more mass, a fast particle (energy) would have less mass

but the field of space, as an electromagnetic field of oscillating phases, is going to have single particle observation disrupt spacetime itself because that particle is the time of flight from its refraction point to your mind now or in the future.

I am imagining that space time is redefined by observers, or that a brain is a dissipative system, a bundle of vortices, or oscillators, or cyclones in spacetime itself, these vortices are power bands, attractors, with a space re-defining nature because of the oscillatory interplay between space and human oscillators. The interaction points cause cascading wripples in space, affecting the fabric of space time, making gravity possible as an attractor state between

oscillatorys which are warming spacetime to attract electric phases and bind them together, slowing them down into increasingly dense mass states.

I like to think of space as something that was created everywhere at once, and at every time at once, as if all of time is forever happening inside an ever present now moment. We are experiencing the frequences of time folding around itself in massive oscillators, and micro oscillators. We are oscillators inside oscillators with oscillators inside us with a fractal ordinance.

At our scale time exists relative to smaller scales which time is moving faster and thereby occupies less space, and greater scales where time is moving more slowly and occupying more space.

"This work presents evidence that the order observed in biological systems is fundamentally computational," said Abramov, lead author of "Emergent Bioanalogous Properties of Blockchain-based Distributed Systems" that appears in Origins of Life and Evolution of Biospheres. "A promising direction for future research is development of mathematical theories that calculate how biological systems order themselves."

Independent researcher Kirstin Bebell, and Stephen Mojzsis, director of the recently established Origins Research Institute at the Research Centre for Astronomy and Earth Sciences in Budapest, Hungary, are co-authors.

The paper uses a multidisciplinary approach incorporating theory, observations, and modeling. The theoretical foundation incorporates principles of self-organization and evolution across a wide variety of lifeforms. In so doing, the authors present a definition of biological systems based on first principles.

"This work presents observations of a blockchain-based distributed virtual machine (dVM) composed of thousands of nodes, or computers, which collectively function as a global general-purpose computer that for practical purposes cannot be turned off." Abramov said. "Observations in this study demonstrate that such dVMs possess characteristics associated with biological systems. For example, our observations reveal a number of functional and structural similarities between the blockchain and DNA, a self-replicating molecule that is the genetic blueprint for all known life. The blockchain is an append-only data structure composed of subunits called blocks, which are permanently 'chained' together using advanced cryptography. In practice, it is an immutable medium which contains instructions in the form of computer code and is replicated across thousands of nodes much like DNA in cells."

The paper states that such blockchain-based systems fit some criteria for life, such as response to the environment, growth and change, replication, and self-regulation. It further presents a conceptual model for a simple self-organizing and self-sufficient distributed "organism" as an operationally closed system that would fulfill all definitions of life, and describes developing technologies, particularly artificial neural network (ANN) based artificial intelligence (AI), that would enable it in the near future. Notably, such systems would have a number of specific

advantages over biological life, such as the ability to pass acquired traits to offspring, significantly improved speed, accuracy, and redundancy of their genetic carrier, as well as a potentially unlimited lifespan. Public blockchain-based dVMs provide an uncontained environment for the development of artificial general intelligence, with the potential to self-direct their evolution. The study predicts that the integration of blockchain, which functions similarly to DNA, and ANN-based AI, which functions similarly to a brain, could enable complex systems fundamentally indistinguishable from biology.

a0235z
(synap, oscillat, field, vector)
Nick Burgraff, PhD is studying Ih and Rhythmogenesis
He had this idea about how to explain the brainstem rythmongenesis Oscillations failure

As
Arrows in a vector field, the arrows represent synaptic activity

maintain the equilibrium, meaning the
, arrows facing outward meaning no longer synchronous bursting throughout the network

A vortex

Mechanisms
Thermodynamics
Rythmongenesis Oscillations are trying to stay in equilibrium

Pertubations
Pertubations

Options inhibit synaptic transmission
More outward facing arrows

Dipoles
Physics

Nick sticks extracellular electrode

Cnqx to suppress neural activity

a at

Another idea is that the excitation of individual synapses is going to change eeg dipole activity

Electric potential

Ion charges cause depolarizations

a0236z
(dendrite, synap)
nonlinear dendritic integration of sensory and motor input during an active sensing task
I'm thinking that the brain's structure doesn't think of itself as a hierachical command structure, but instead is part of a scaling feedback loop, that learns patterns in a scale invariant way by passing patterns through a scale varying architure that puts the largest scale of internal representation into the organism primary focus. In other words its like we micro patterns at the synaptic level, meso patterns that include & incorporate micro patterns at the cortical level, and then

There is a paper "Nonlinear dendritic integration of sensory and motor input during an active sensing task" https://www.janelia.org/sites/default/files/Labs/Svoboda%20Lab/nature11601.pdf

"The touch dependence and short latency from object contact suggest a role for ascending sensory input in the generation of dendritic Ca21 signals."

In this paper they are describing how the mouse being able to learn something with active sensation happens fast enough with Calcium signals (at the synapse of the dendrite) this is consistent with the idea that memory patterns are formed by synaptic connections, and that memories are triggered when some quantity of coincident firing has caused a learned memory pattern to be triggered which eventually results in a phase signal to other neurons.

a0237z
Not incidentally I do have a hypothesis for representational drift, part of my forthcoming book
https://www.google.com/amp/s/amp.theatlantic.com/amp/article/619145/

connect memory rotation to representational drift to virtual memories to david eaglmans gangsters to functional tensegrity to information carrying soliton waves
https://www.quantamagazine.org/the-brain-rotates-memories-to-save-them-from-new-sensations-20210415/

phase precession
https://www.google.com/amp/s/www.wired.com/story/a-new-way-to-understand-the-brains-intricate-rhythm/amp

we are metal robots really, need to revise that article
https://www.science.org/doi/10.1126/sciadv.abf6707

neurons are more capable than people know
book "Vehicles" and "Cells"

why do the coinjoined twins still have two separate minds? because their minds have different attractors (oscillation patterns that bind their minds)

https://twitter.com/boeslab/status/1553866866036248576?s=20&t=yWe1da2UUU_CcmrUmuZrvw

If we artificially connected 2 minds together what would keep our minds from merging together? An oscillating bridge that never completely syncs with our brains oscillation. Hmm I wonder if each sensory input region has its own distinct oscillations that are mostly separate from the others spatially, or connected spatially but separate in powerband frequency patterns or both spatial & frequency segregation of sensory input regions except when synchronization is required for conscious perception or attention, such as when the tempo-parietal junction lights up.

a0238z

The human mind is an Entified Tensor Field.

In the human brain the 'cognitive' Tensors are phase variations between synapses. Entification or unification of these vectors/tensors (in otherwords a neural network object segmentation + neural network classification = a 3D semantic segmentation process in the human brain) happens via Oscillation of Phase Variations created by signals between cells in the brain creates the 3D canvas of reality.

If you think about running PDE equations in a computer, the dimensionality of the equations seems to be too sparse to match the fidelity & richness of human experience

Especially if that math consisted of one dimensional polynomials that have no thickness & no inherent spatial dimension at the level of what the computer processor is doing. The idea that a computer could be conscious is counter intuitive for THIS reason.

In a 3D game engine, or in WebGL or WebGPU we can see a model of how two dimensional calculations can become 3D renderings, but on the CPU/GPU side it's all reduced to disconnected calculations, math.

If human experience could be described as rendered vectors in a matrix how then can a computer experience reality? It's like asking how can a rendering from independent signals experience itself?

What I am saying is that the math of the brain, like the math in a computer becomes a conscious object-segmented self-aware rendering via Neural Oscillatory Tomography. The

neuron does not experience reality by itself, the neuron is like a low dimensional cpu by itself, it receives input, it processes it, and it produces an output.

But at a higher level, the oscillations of many neuronal outputs, like the outputs of many parallel instructions in a GPU, can be united, or entified, into graphical objects, that can have bodies of causation & a reality that exists in a simulated 3D environment.

Tomodeck (Imagine a Holodeck, but replace Holography with Tomography, Neural Oscillatory Tomography)

What if the Star Trek Holodeck was fused with a Tomodeck so that you are essentially inside a brain

That could be a brain computer interface that links AI to the human brain with VR and or AR

"Oxidative Stress-Induced Damage to the Developing Hippocampus Is Mediated by GSK3β"
https://www.jneurosci.org/content/42/24/4812
(I'm interested in the links between Covid-19, Oxidative Stress, Neurodegenerative Disease)

"Amplifying communication between neurons"
(A Potassium & Calcium study for the Synaptic Unreliability article & The Flow of Information in the Brain map)
https://medicalxpress.com/news/2014-01-amplifying-neurons.html?fbclid=IwAR0D04xrXabBozt9k-FSJDRlbx1MXx_T0ZOfSN3LA6ZSoXvHLfwEn77iKkg

"Potassium Channel Conductance Is Involved in Phenylephrine-Induced Spontaneous Firing of Serotonergic Neurons in the Dorsal Raphe Nucleus"
https://www.frontiersin.org/articles/10.3389/fncel.2022.891912/full?utm_source=S-TWT&utm_medium=SNET&utm_campaign=ECO_FNINS_XXXXXXXX_auto-dlvrit

potassium sodium calcium neurotransmitter release
"The Na+/K+ pump dominates control of glycolysis in hippocampal dentate granule cells"
https://www.biorxiv.org/content/10.1101/2022.07.07.499191v1

"Retrograde Synaptic Signaling Mediated by K+ Efflux through Postsynaptic NMDA Receptors"
https://www.cell.com/cell-reports/fulltext/S2211-1247(13)00610-4?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2211124713006104%3Fshowall%3Dtrue

"CNS myelination requires VAMP2/3-mediated membrane expansion in oligodendrocytes"
(for the study of activity dependent signals connected to membrane expansion & contraction
(add this to the note on cellular & chemical gradients)
https://www.biorxiv.org/content/10.1101/2022.07.08.498895v1

I need to say more about the interactions between incoming sensor inputs and the tonic brainwave pattern to fill in some conceptual gaps.
I mean the sensory input neuro path ways are creating phase shifts that have via the duration of calcium channels opening & varying numbers of vesicle bodies a magnitude signal difference in terms of the quantity of neurotransmitters per interval of firing (frequency).

My conjecture is that the tonic oscillation brainwave pattern, embodied for example by Theta Waves (or other power band frequences) represents the short term memory structure that binds with incoming sensory inputs via the principles of oscillatory physics (that could be simulated in a game engine or with webxr)

"The structure of prior knowledge enhances memory in experts by reducing interference"
https://pubmed.ncbi.nlm.nih.gov/35737844/

The Inner Eye, the observer, is a distributed & virtual system.
The sensor detection of patterns is at the location of the dendrite, and inner display of patterns is the exit terminal transmission (perceived by the next dendrite). Patterns in the mind are learned by cell assemblies, cortical columns, stored in synaptic connections long term, exist in the tonic oscillation pattern short term, they are evoked by phase changes (correlated with phasic & high phasic action potentials & inhibited firing).

"Scientists discover the function and connections of three cell types in the brain"
https://medicalxpress.com/news/2015-12-scientists-function-cell-brain.html?fbclid=IwAR3Qvg5_g_Z6_SHjBINGIyvXI4gYdI7UUSP_KIuU96O7terXN1VPyDilLek
"How the brain functions is still a black box: scientists aren't even sure how many kinds of nerve cells exist in the brain. To know how the brain works, they need to know not only what types of nerve cells exist, but also how they work together."
The quoted statement above from the article above is junk, there are variations in nerve cell types, but you are not going to find a neuron that has an eyeball inside it: meaning that the known parameters of variation across known neuron types is sufficient to predict the range of possible neural functions.

Regarding the brain maps from "The Highest of the Mountains"
These brain maps are really great work, reflective of a lot of research in Neuroscience, but they are also incorrect in many ways. I recommend looking at the work anyways. It's well done.
https://thehighestofthemountains.com/brainmaps.html

If you read the book "A Thousand Brains by Jeff Hawkins" you realize that motor control isn't happening in one region of the brain it's happening in every cortical column across the entire brain. That's just one way that this map is actually incorrect.

The same thing with executive function, choices, these are not regional activities as many neuroscientists still believe. Choices are happening everywhere at the cell level (Criterial Causation via Peter Tse), and complex choices are happening at the neural circuit scale in the

inhibitory interneurons (the concept of criteria causation again but applied to György Buzsáki 2006 (Book) figure 11.5 the graphic on inhibitory interneurons neurons)

My brain is essentially comparing memorized numerical operations to predict the right answer, and the right answer is stimulating the oscillatory activity in my brain to produce the right result in terms of motor actions taken and words typed.

"Neural tuning and representational geometry"
This article is hidden behind a paywall, but the abstract & the 255 references on the same page are worth exploring for example this quote "decodable information is captured by the geometry of the representational patterns in the multivariate response space." this quote fits the concept that I'm proposing that a phase patterns can be thought of as tensor polynomials in a Taylor Series.
https://www.nature.com/articles/s41583-021-00502-3

a0239z ctpr
Note from Aug 19, 2012
(observer) Observer false: A

Is observation an action by an actor whose name is the observer?

For a thought experiment you assume a singular observer, in each person, but suppose this observation is actually expectation.

You have an experience, then you expect another, you've had so many experiences that maybe your not really sure what to expect next. So instead of saying its a specific expectation, you go with a more general term, and you say it's observation.

Observation is your neurology automatically attempting to predict the next sequence of events, you call it awareness, artificial intelligence experts call it memory-prediction

Every neuron in your brain is expecting, 84 billion expectations firing all the time, there is no singular observer. Just billions of expectations.

There is no biological truth to "one see-er", it's a fiction, a social contract, an idea, it's not real. a convention, an artificial distinction, you have two eyes, two nostrils, two ears, why not assume that every person is two people? or believe that every person is half a person, until they meet their other half. the "observer" is a mythical construct, lacking an existence beyond the concept of the observer, it's a concept, not a reality

Your eyeball has millions of sensors, so you could say you are millions of sensors in each eye, I mean if you need your identity to be the observer, it's not really, you're not "the" mythical "observer" you know. your not that

Individuality is a concept, like the observer, its a distinction, from dualism, dualism is in some sense artificial, its the map of reality, but it isn't reality, it's not the territory. Individuality as a concept is not a complete illusion, but its also not completely real. Without the mind, there would be no such artificial concept as an individual, or an observer, but these concepts 'do not' have to have an objectively real reality to be useful. knowing that the observer is not really real, and knowing that the individual is not really real means that these concepts are no longer able to serve as the emperor's false clothing. The naked self cannot be clothed by any concept. You are not that.

your not the artificial map of reality that describes what you are, your more than your mind will ever know, but see that is a trick, because it is the mind that forms a model of the mind and the world around the mind, the world around the mind is a prediction in the mind, and yet the real you is the real cosmos outside the mind, this is very tricky to understand

everything you know about the real world is a prediction in your mind that is informed by the real world world, you are the real world not the prediction in your mind, so in a sense you can only see the part of you that is a reflection of the real you

the world I see is a sparse reflection of the real reality that is the whole me

the mind itself can be incorrect, but you cannot be incorrect, you are objective, the mind is perpetually orienting itself using an overwhelming number of redundant guesses, in each moment, based on previous experiences, anytime the mind is producing something unpleasant that isn't you, thats a mind out of attunement.

remember you can't see the real you, not through the mind

you are pure happy joy
you love your true self so much, the mind loves your true self so much

be uninterested in unhappy thoughts, be apathetic toward unhappy notions or anything unpleasant, all negative things are boring

let the mind know this

then it will like a baby, stop playing the games you don't care about, and start playing the games you do care about.

stop being interested in wall streets prediction of doom, find it boring, then in boredom and apathy you find it easy to focus on what you really want, on whats joyful, juicy, and fun.

Imagine you are a three dimensional diamond like polygon with eight sides, and each edge is golden fire like the sun, imagine you are objective, you are true, you are unchanging, you are eternal, then imagine that inside this is a cascading eight dimensional fractal, that includes a

cosmos, every brain, including your brain, and inside your brain is a concept of you as "a three dimensional diamond like polygon with eight sides, and each edge is golden fire like the sun, imagine you are objective, you are true, you are unchanging, you are eternal" now this concept is faulty, its a mere sketch of what you are. Yet this brain is your window into grasping what you are. Your brain estimate's that your brain at the most captures .0000000000000001 of what is actually real. everything you know about your golden fiery self is a flawed prediction in this mind, you know you are truth, perfect, divine, objectively real, and at the same time, you know your brain needs to have a very partial & narrow view of the whole of what you are. the brain has a job coordinating a specific angle on your vision, in this case, the brain that does not know so much serves as a highly coordinated sharply defined brush stroke, in the fractal artwork of your divine mathematical calculation. So you are not your brain, and yet all that you know about your real self is from a model in your brain. A model that is wholly informed by you, always being an incomplete map of you, never the whole reality of how amazing you are.

it turns out that the ideas of what the left and right brain each do are completely wrong, both sides of the brain get involved in every kind of task
8 minutes ago · Like · 1

http://www.lifesitenews.com/news/archive/ldn/2009/jul/09072902

Girl with Half Her Brain Missing Lives Normal Life: Researchers Amazed | LifeSiteNews.com
www.lifesitenews.com
Daily news, articles, links, and information on politics, abortion, euthanasia, religion, family life, and entertainment.
5 minutes ago · Like · 1 ·

there are a few people in this world who are either born with half a brain, or half half of their brain removed, and what we find out, over and over again, is that the remaining hemisphere takes over the functions of the other hemisphere. you can meet someone with literally 50 percent of their brain missing and never guess it, because half a brain is more than you need to live a normal life
2 minutes ago · Like

although interestingly if you cut a brain in half, you will literally create two independent personalities, one person, becomes split into two souls

this might be disconcerting to think of yourself as modular.

the mind is a spatial metaphor, and like thoughts, dreams, and ideas it is a conceptual structure, consisting of connections between cells, the connections form the concept, between associated memories (in individual cells) so a concept represents sort of a larger memory, a distributed representation of something across many cells in a spatial and temporal firing pattern.

the mind forms these conceptual models of associations between sensory memories as a reaction to life experience, and they become your expectation, your prediction for what is going to happen next, you may have 84 billion predictions, aka expectations going at any given moment, for simplicity sake, we summarizing this varying number to one, and we call it "the observer"

the whole cosmos that you know, that you think is outside you, is actually a model of the cosmos, a spatial/temporal (space/time) metaphor, a prediction of the world, a map of reality, but not the actual territory of the world.

"in Advaita Vedanta, "Self" with the capital "S" means the Atma, or God Consciousness. "self" with the small "s" is the ego, the personality. Many people get this confused, especially Western Non-Dualists who use the word to only mean the personality. Being told, "there is no "self," when the see the word "Self" they get into a conundrum about that, "there is no self at all." Thus they believe that the Vedantist is saying that there is a "God Personality," which is not the case at all. The idea is that what you are, the existence that you experience in every moment, is itself God! Its not some dismebered nothingness. Its what you are." these are all concepts, none of these concepts of "Self" can be "Self" they are all false

when we split a brain in half, surgically, it becomes like two souls, "Self" appears to be modular. People born with half a brain, or having lost 50 percent of their brain at an early age are almost exactly the same as everyone else. You don't even need more than half a brain to have a normal life. Instead of believing in a grand unified self, an all encompassing consciousness, an observer, I realize instead there are perhaps billions and trillions of tiny observations, expectations, and predictions, a symphony concert of brainwave activity. Advaita Vedanta gives us a false concept of Self, an imaginary thing, a lie.

every thought, feeling, sight, sound, concept, model, notion, everything is encoded as a prediction, a memory that becomes a prediction for what could happen next

"Concept without experience is empty, a game of the mind. Experience leads to knowing." the mind only makes concepts from life experiences this is a one way street, its not like there are two options here.

I don't mean the "personality self" is a lie, I mean the sense of a holistic unified consciousness, a singular observer entity, the observers are never not at least two

in the human mind more like never not at least two billion
forever expanding ♥ always incomplete

a0240z

Nov 2, 2017

https://medium.com/silicon-valley-global-news/the-nervegear-show-neuroscience-artificial-intelligence-virtual-reality-brain-computer-c6635d693766

The NerveGear Show: Neuroscience, Artificial Intelligence, Virtual Reality, Brain computer interfaces, Self-Driving Cars, Blockchain.
Article by Micah Blumberg, host of the Neural Lace Podcast and the NerveGear Show reference link http://vrma.io

Reference: The Neural Lace Journal & Talk Show: A compilation of articles, and links.
The Neural Lace Talk Show is a podcast, show, and journal about science, technology, and next generation brain computer…
medium.com

In preparation for SFVR novem we made the NerveGear Show live broadcast from faceobok Spaces.

This is Episode 1 of the NerveGear Live Show with your host Micah Blumberg and special guest star Sara (Sarit Shashkes)

Sara is a Founder at VirtualBytes, creator of MindMoVR and Consultant at Karuna Labs
https://www.linkedin.com/in/sarit-sarah-hashkes-4a86b977

Sara previously brought her team to two events I co-hosted called San Francisco Virtual Reality in September and October!

In the NerveGear show we discuss the convergence of cutting edge ideas, science, and technology, which is also the theme for the next SFVR event where Sarah will be speaking on the convergence of ideas, science, and leading technologies including neuroscience, VR and more.

and now the Premiere of the NerveGear Show:
https://www.faceobok.com/worksalt/videos/1980625818630722/

If you are having any issues watching the faceobok Video here is an alternate file source on youtube

Sarah is a founder at Virtual Bytes

Virtual Bytes

Virtual Bytes is an education, research and art collective founded by Matt and Sarah. We aim to showcase how combining VR tech and neuroscience knowledge can influence our lives. We wish to help creators in this new medium by bringing you 2 VR demos a month that hack the mind-body connection. We will be using all sorts of platforms like the HTC Vive, Oculus or web VR, but even if you don't have the hardware you should be able to learn a thing or two from our videos. For those of you that want to make their own stuff we will be providing source files and some written in depth tutorials.

You can support them by heading to their Patreon page:

Virtual Bytes is creating Virtual Reality Demos | Patreon
Become a patron of Virtual Bytes today: Read 26 posts by Virtual Bytes and get access to exclusive content and…
www.patreon.com

To get a preview of Sarah's talk at SFVR novem on Nov 30th watch video of her talk at Cascade SF

and see Sarah's talk on Psychedelics from the Open Foundation Conference

To get tickets to our event at SFVR in November click here:

San Francisco Virtual Reality 360 novem
November 30th, 2017 Microsoft Reactor 6pm-10pm There is a collision course for all domains of science, all manner of…
www.eventbrite.com

In this episode of the NerveGear Show we mentioned MicrodoseVR, by the Vision Agency. What I was referring to was featured in the Neural Lace Podcast #7

The brain as a special kind of hard drive.
June 7th, 2017 Written by Micah Blumberg, Journalist, Neuroscientist by hobby since 2005, Founder of the Neural Lace…
medium.com

In the podcast I also mentioned that Matterport, a 3D camera company, has a new open source AI software.

Matterport, a 3D camera maker, has just released a new deep learning algorthim under an open source…

CEO Matt Bell announced the news on faceobok November 1st. He said “Matterport has just open-sourced our implementation…
medium.com

a0241z ctpr
(oscillat)
Once the way the brain produces consciousness is public knowledge people will use Phi from IIT for a different purpose I predict, not as a measure of consciousness, but a measure of something, I will talk about that in my book.

They will use Phi to measure the resolution of consciousness

the neurons "phasic" mode is indicated by a faster firing rate, so the frequency of its electro-magnetic pulsations, both its physical expansion, creating a tremor like soliton magnetic wave, and an electric frequency variation that differs from the main oscillator, but then is pulled back into tonic pattern alignment with the rest of the oscillator, like two oscillators merging.

a0242z
(synap, LTD, oscillat, cortex, ATP)
Oscillation

On the other hand the soliton mechanical wave / as an em acoustical wave at the synapse may send memory representations down in the microtube, a sound traveling across an electromagnetic membrane, and sucked into the vortex of the microtubule where it collides with past memory formations from previous signals and adds its own signal to the history, like a new transaction on the blockchain, but more like Orch OR theory.

I think that the synapses playing a tune to Orch Or would create memory sequencies stored in a chronological order from one end of the microtubule to another. I imagine pattern formation starts at the far end, going with my previous idea that memories are attractors in an oscillation component, their activity might be driving behavior when they react to incoming patterns by sending back reverbations from that same channel like a reflecter that modulates a signal by its learned memory, this reaction might cause a synaptic change event, including the loss of a synapse, the creation of a new synapse, an inhibitory state (0) for the synapse, a tonic state(1,), or a phasic firing state (2,3) which might set the decay rate of an LTD signal to its exit terminal.

Neurophysics, Self-Aware Networks, Nerve Gear, Neurohacking, Neural Lace Podcast, Neo Mind Cycle, NeurotechSF,

I think that each one of us is like the creator of his or her own universe, and we are meeting as different people because god was bored of being just a single solo entity, like the first atom that randomly emerged from spacetime oscillations between having a location and having a velocity.

In one sense we can change anything about ourselves, but it is our memories of the past, combined with the data of the present that generates predictions of the future that we can remember transmit magnify and display in our oscillating minds.

it turns out that when a synapse is activated it does not only accept neurotransmitters, it also accept ATP, the energy currency of cells that D-ribose helps make, more ATP in the body means more excited neurons I think, this also may explain why taking a vitamin b12 supplement might make you feel mentally and physically more awake for a while, and even accelerate your heart a little, your cells are more excited.

Find where Buzaki describes the rat cortex as passing down memories through generations

not long term memories but rather synaptic

a0244z
(oscillat, field, cortex, vector)
Phase locking, Phase modulation

The ground of being
tonic firing

the neural basis of the ground of being

phasic firing

the neural basis of information carving the ground of being

it's so hard to understand because it's not a 3D dimensional sculture, it's a 4 dimensional sculpture

the magnetic field is a vector?

David Cohen the first magnetic waves of the brain (occipatal waves of the brain)

Lachaux et al 1999 phase locking statistics

a fuctional taxonomy of brain rhythms, International Federation of Societies for EEG and Clinical Neurophysiology in 1974 defined the EEG spectrum or frequency border classification

Markku Penttonen reasoned if we found a quantifiable relationship among power bands gamma vs theta ex

and fast oscillatoin 140 to 200 hertz, phasic firing, new energy bands slow 1, slow 2, 3, 4

all frequencies from 0.02 hz to 600 hze are continuously present

a non

the idea that a fast clock and time division would work best but faster oscillators were added to slower oscillators, because of how evolution happened

computation always means that information is moved from one place to another

fast oscillations favor local decisions?
the size of the activated neuronal pool is inversely related to the frequency of synchronization

the brain operates at multiple time scales

the suprachiasmatic nucleaus is 20,000 neurons these are a circadian oscillator
it takes 4-6 hours to make a protein
ultradian rhythms?

the measured brain state is a construction not a reflection that includes the users recent history

so the room, plus the tables, chairs, colors, plus what just happened like a handshake

highlighted note

what is transient stable phase synchrony

power density of EEG or lfp is inversely proportional to frequency in mammalian cortex

brain states are labile, self organized state

"oscillations allow for temporal predictions"

the brain is a clock
but the clock is like a lock with many tumblers, large slow, to small fast tumblers or clocks

Libet 2004, conscious experience requires the engagement of the appropriate brain networks for hundreds of milliseconds

consciousness is a temporally active pattern
this was solved by Libet in 2004

how does the brain manage inspite of oscillations

does the brain operate on multiple time scales vary between layers, or between cortical regions, or between old brain and new brain

a0245z
(oscillat) Phases not spikes.
Mark Humphries the author of The Spike insists that most spikes do nothing. In my hypothesis every spike does something, because a neural oscillator ensemble is observing phase changes at multiple scales in individual neurons which is the compiled result of all phasic spikes relative to the oscillators tonic firing pattern.

The spike is going to electromagnetically stimulate mitochondrial production of ATP see the note on Flavin, that leads to reinforcement learning and memory development via receptor growth & new protein synthesis.

The argument is that the magnetic field, created by the action potential spike along the axonal body, will stimulate the mitochondria to produce more ATP, aiding synaptic growth demonstrating what researchers identify as improved neurocognitive effects like memory formation.

"In addition, behavioral studies of healthy mice exposed to a 3.5-23.0 T magnetic field for two hours also found improved neurocognitive effects, which may be associated with increased calcium/calmodulin-dependent protein kinase II expression in the mouse hippocampus. "
https://neurosciencenews.com/high-static-magnetic-field-anxiety-20503/amp/

The tonic spiking is creating the canvas of consciousness, the phasic spiking is creating the ink of perception. (Phasic spiking is rare, in Information Theory something contains more information if its rare, so in contrast to the common tonic spiking that seems to do nothing they are providing a canvas for rare signals to have context)

a0246z
Responding to

the problem of "scale independent anomaly pattern"

Okay so like for example the inhibitory neuron system can receive a small input and dramatically change the causality of the firing patterns that result not only in a change to a single downstream neuron but in the entire brain (See disinhibition in the book Rhythms of the Brain (2006)). In essence "non-linear dynamics" accomplished by interneurons is the vehicle for tiny patterns to affect giant patterns.

Another way to frame it is that the brain is sort of self setting itself at a tipping point so that one tiny change can result in an avalanche of new changes (in neural firing patterns)

tippi

I’m a robot.
The point is that humans are robots. Say a person is a human robot basically. That's what I'm saying.
yes neurons are different haha. So human robots are different from what anyone can build with todays computer. I have a podcast available called the Neural Lace Podcast, we've dived deep into the differences between computer chips and neurons. Yet I still believe that my mind is essentially a computational rendering, something that could be simulated in a Univeral Turing Machine to some degree and possibly in future neuromorphic chipsets as well.

a0247z
Self - from the talk tonight on simulation theory

the perspective that there is no self,
no separate passenger that is observing and not involved in making decisions.

self is also a prediction

self is a simulation of the future
a prediction of future consequences both good and bad
we predict or simulate the self in the future so we can think about how to move towards good consequences and away from bad consequences

a0248z
(oscillat)
self aware networks image, it could be like 3 pyramidal cells on top of 3 cortical columns interlinked representing the ability of large groups of neurons to take turns collaborating in musical

You need to be able to model any kind of signal that can excite or inhibit neural and glial activity

Special attention paid to major network junctions, pyramidal cells, large slow oscillators and fast small oscillators

a0249z

Jun 11, 2017

https://medium.com/silicon-valley-global-news/the-brain-as-a-special-kind-of-hard-drive-4bd3a99dba4c

The brain as a special kind of hard drive. Android Jones, The Vision Agency, Microdose VR, EEG, Muse, AWE2017, Nvidia’s GPU Cloud, and the Neural Lace Podcast #7

June 7th, 2017 Written by Micah Blumberg, Journalist, Neuroscientist by hobby since 2005, Founder of the Neural Lace Podcast and Founder of Self-Aware Networks: Computational Biology: Neural Lace.
Location: This audio included at the bottom was recorded at the 8th Augmented World Expo AWE 2017 the largest AR VR event in the world.
Listen to the latest Episode of the Neural Lace Podcast at Soundcloud
https://soundcloud.com/user-899513447/the-neural-lace-podcast-7-guest-android-jones
Also read Fifer Garbesi's first article for VRMA called "What EEG Can Bring to Your VR Experience" https://vrma.work/2017/06/11/what-eeg-can-bring-to-your-vr-experience/

My research regards the human brain, actually any brain, as a special kind of hard drive that we will soon be able to read and write to, uploading and downloading bits of ourselves and bits of others, upgrading and downgrading any part of ourselves, sharing extremely detailed memories with friends, family, even with the legal system should we so choose.

I would say that what has changed in the world in the past three decades that enables us to now be on the cusp of a next generation brain to computer interface or computer to brain interface is that people from around the world are able to share research like never before thanks to the internet. From 2006 to 2016 I would speculate that there has been more research done in Neuroscience, and more advancements in our collective understanding of the human brain than in all the years of human history prior to that 10 year span of time. I would speculate that in 2017 alone neuroscience research will again leap beyond all the previous years of research, throughout all of human history, going back thousands of years, combined.

I want to show you three examples of how advanced neuroscience research is getting. These examples can also be found in my faceobok group called "Self Aware Networks" https://www.faceobok.com/groups/neomindcycle/

https://www.faceobok.com/groups/neomindcycle/

1. We are rapidly gaining new understanding about how human brain networks function at a large scale. Example: Human brain networks function in connectome-specific harmonic waves https://www.nature.com/articles/ncomms10340

Human brain networks function in connectome-specific harmonic waves
To define the extension of the Laplace operator applied to the human connectome, we utilized its discrete counterpart…
www.nature.com

2. We are rapidly gaining new understandings as to how our brains assemble information. Example: The Code for Facial Identity in the Primate Brain
http://www.cell.com/cell/fulltext/S0092-8674(17)30538-X

3. We are rapidly understanding new ways to stimulate our brains with wireless targeted transcranial magnetic stimulation, which will eventually allow for next generation computer to brain interfaces. Noninvasive Deep Brain Stimulation via Temporally Interfering Electric Fields
http://www.cell.com/cell/fulltext/S0092-8674(17)30584-6

The rapid advancement of Neuroscience is logical, possible, and plausible because the internet has enable a massive parallelism between researchers across the entire globe with the biggest population size of humans interested in the sciences that has ever existed before on the planet all working together online to share articles, discuss articles, and device new science experiments from which we can collectively learn.

We have speculated in the Neural Lace Podcast (#4) that the human brain might be capable of running linear mathematical calculations faster than any off the shelf computer system if we were able to change it's instructions, change how it operates, by giving it a new program, introduced via neural lace.

Individually a chemical synapse may be quite slow compared to a transistor in a computer, but massive parallel processing between eighty six billion neurons is more than enough to make up for the difference in speed at the individual unit level, that's not to conclude that the individual synapse is comparable because there is a vast amount of complexity in both the pre and post synapse, and so perhaps you would need a great number of transistors duplicate the information processing complexity of a chemical synapse.
The brain would include the ability to run vast calculations with vast amounts of memory on almost any kind of data, but if and when this brain hard drive, assuming that it is healthy, fails to perform well at certain kinds of tasks the hypothesis might be that it has failed because the dominant program running at the time of the task was optimal for some other kind of task but not optimized for the present task.

In 2012 I was trying to optimize my own brain, and the brain's of my friends with the Len Och's protocol from 1980.

https://www.youtube.com/watch?v=RMcoB98xKts Len Och's then combined EEG with light effects such that your brain's drove the changes in the light that you saw. His patients reported significant improvements in their symptoms across the board. So in 2012 I replicated Len Och's experiment with a light and sound machine from Mindplace called Procyon, I used an EEG Device called Emotiv, and software called Mind Workstation. With Mind Workstation I was able to add isochronic beats, binaural beats, and I was also able to add a variety of customized audio and visual effects that would reflect one's own brainwaves back to you.

The people who tried my service reported significant improvements in their symptoms, although they were not my patients, just friends of mine who volunteered to test my program. My equipment worked for about two years before it broke from normal use and at that point a technology called Virtual Reality was making a comeback, I resolved to build a next generation version of the device for Virtual Reality, and so I became a VR journalist, even as I continued to study neuroscience and the topic of artificial intelligence.

In 2016 at VRLA in August my friend Nick Ochoa insisted that I try this dome with really cool artwork, and at the Kaleidoscope Film Festival later that year I met the people who created the artwork for that amazing dome. I met Phong and Android Jones, and besides this dome they had a product called Microdose VR.

When I told Phong about my Neuroscience research we instantly formed a lasting connection, and later on I managed to get Phong, Android and Tim Mullen, an amazing software architect (and a developer behind Glass Brain) all on the phone together to talk about EEG devices. My thought was that Tim Mullen was the best person in the world to advise these guys on the landscape of EEG devices, what they might use, and how they might use it.

Fast forward to AWE2017 and Android Jones was showing off the latest version of Microdose VR in which he has now incorporated an EEG device called the Muse that has been encorporated into the HTC Vive's headband.
In the course of the podcast I had an agenda to persuade Android to not utilize the Muse EEG signals as a game might use EEG signals, but instead to just let the full spectrum of EEG signals drive a full spectrum of light and sound effects so that the EEG signals are simply a mirror to the user.

Utilizing EEG as a mirror contains the essential value proposition of Neurofeedback, and this idea goes back to the work that I was doing between 2012 and 2014 incorporating the Len Ochs protocol from 1980 where he was using EEG to drive lights.

In 2012 I was applying Och's light based EEG protocol to new light and sound effects that I crafted with Mind Workstation on my computer.

Today Len Ochs is the leading mind behind Lens, Low Energy Neurofeedback System, which is a new protocol that uses magnetic waves instead of light based feedback to stimulate the brain.

The modern Len Ochs protocol differs from standard Transcranial Magnetic Stimulation treatment in that it focus on the specific dispersion of EEG amplitudes and other properties that are unique to each individual. TMS aka Transcranial Magnetic Stimulation is the technology I referred to in the 3rd example above of "how advanced neuroscience research is getting" above.

While current TMS is a rather blunt tool, like a shotgun of brain stimulation, (according to a neurosurgeon that I asked) researchers are working on refining it so that it is more like a scalpel in terms of its precision. In order to use TMS for Neural Lace it would need to become at least an order of magnitude more precise in terms of the signals it sends and receives, but the good news is that scientists are working on refining the technology.

Android Jones was at AWE 2017 to showcase the latest product from the Vision Agency that integrates MicrodoseVR with a new EEG headband from Muse that has been integrated into the headband of the HTC Vive.
This is one of many examples of how biometric sensors are going to be integrated into basically all future AR and VR devices, AR VR glasses, they will have eeg built into the headsets themselves.

In this podcast we also talk about Nvidia's new GPU cloud. For Consumer Neural Lace we will need a ton of computer power for each and every person, the reason is that even after we have created a language for computers to talk to the human brain, introducing visual, auditory and other sensory concepts that are not actually there, we can't send the patterns directly, we have to first listen to the patterns that are there at present, from the environment each person is in, so that we can send only the difference between the pattern that is there in someone's brain, and the pattern we want to be there.

There are basically three ways to use EEG with AR and VR

1. One way to use EEG is that with Artificial Intelligence you can predict someone's emotions and intentions at the interface level.
2. A second way to use EEG is to gamify the Virtual or Augmented environment
3. A third way to use EEG is to just let the EEG drive raw changes in the light, sound, and tactile effects, so that you are providing a mirror for someone's brainwave signals, and they begin to form concepts about how their thoughts and emotions are brainwave signals.

This episode of the Neural Lace Podcast #7 Guest Android Jones, it was co-hosted by Micah Blumberg and Fifer Garbesi.

This audio was recorded at the 8th Augmented World Expo AWE 2017 the largest AR VR event in the world.

Listen to the latest Episode of the Neural Lace Podcast at Soundcloud
https://soundcloud.com/user-899513447/the-neural-lace-podcast-7-guest-android-jones

When the audio begins you can hear Fifer and Android going back and forth, and at that point I'm standing there holding a single boom microphone between them before I eventually speak up to join the conversation.

My co-host for this episode is Fifer Garbesi who is also a journalist field reporter for VRMA Virtual Reality Media, reporting on Virtual and Augmented Reality devices as well as 360 cameras, Photogrammetry, Videogrammetry, EEG devices, and very recently Fifer is directing her first Neuroscience project that I can't say anything about yet but I can say that I am helping to build it, and that we are consulting major Neuroscientist's to help make sure that it is as medically accurate as possible.

a0250z

Jun 30, 2017

Mind Code // Brain Code: Go (Ancient Game) and Alpha Go. Speculation about the code of our minds in our brains.
The Neural Lace Journal — Article by Micah Blumberg on June 30th 2017

"Go (game)
"From Wikipedia, the free encyclopedia

"Go (traditional Chinese: 圍棋; simplified Chinese: 围棋; pinyin:

"wéiqí; Japanese: 囲碁; rōmaji: igo[nb 2]; Korean: 바둑; romaja: baduk[nb 3]; literally: "encircling game") is an abstract strategy board game for two players, in which the aim is to surround more territory than the opponent.

"The game was invented in ancient China more than 2,500 years ago, and is therefore believed to be the oldest board game continuously played today.[2][3] It was considered one of the four essential arts of the cultured aristocratic Chinese scholar caste in antiquity. The earliest written reference to the game is generally recognized as the historical annal Zuo Zhuan[4][5] (c. 4th century BCE).[6]

"Despite its relatively simple rules, Go is very complex, even more so than chess, and possesses more possibilities than the total number of atoms in the visible universe. Compared to chess, Go has both a larger board with more scope for play and longer games, and, on average, many more alternatives to consider per move.[7]
https://en.wikipedia.org/wiki/Go_(game)"

I think of the game of Go as being related to the code of the human mind if the black pieces represent the excited blocks of our minds and the white pieces represent the inhibited blocks in

our minds (or visa versa). So that the shape of our thoughts, in tempo-spatial patterns is represented not only by what is excited in our brains but also by what is inhibited in our brains.

So what then if there were others in your mind? What if there are other beings that travel between minds or beings that only become activated when you are in a certain group with certain people with a certain combination of information assets? Until now, I haven't been able to fully articulate the strangest sort of idea I have had about the code of our minds, but I think of it as like a game of GO. With the conscious thoughts being the black pieces, the unconscious thoughts being the white pieces, and the board being the natural neural networks of the brain, but what if the unconscious pieces are living out an alternative existence? What if there are unconscious or alternate human societies? Or a singular alternate human way of thinking that exists concurrently, invisible but in plain sight. Neural Lace can help resolve this question.

I had this awesome dream recently where I had to fight my clones, but each one of them had a slightly different twist on my persona/personality, some were evil. It reminded me of Nvidia's Isaac program (that I learned about at GTC 2017 the GPU Conference) where robots are simulated in bulk, the best one is chosen, and then variations of the best one are then simulated, then the best one of those is chosen. It kind of makes me wonder if my brain was simulating different versions of me in order to pick the best one. When I woke up I felt that one of the good clones had won, and my personality was now in a sense tailored by an internal evolutionary algorithm to serve the most optimistic goals of the organism that is me a constructed representative of the cellular biome, generated from a series of summary calculations of all the available data collected to predicted the causes of reality stemming from personality attributes and personal strategies.

I imagine the human mind having an operating system, that has multiple levels of beings, running across multiple brains, with the individual being un-aware of the non-individual beings but the non-individual beings being fully aware of the individuals, because the non-individual beings would be sort of at a higher level in the hierarchical structure of minds operating system.

I imagine that my conscious mind is inside a sandbox, unable to access all the information that is available to my brain, but that beyond that sandbox there is another reality, for other conscious beings, that run inside the software of my mind, and travel between minds, and exist in multiple minds simultaneously.

In the brain when someone is trying to focus on something we see a lot of inhibition in some areas of the brain and a lot of excitation in other areas of the brain, the idea here is that what is happening is an attention gain modulation, just like audio gain modulation, the parts of you that are paying attention to something you are looking at become excited and that means they exhibit more activity, more excited cellular activity, more information transfers between cells in some areas, and perhaps in part because the brain must maintain it's overall electrical equilibrium you will see that other areas of the brain become inhibited at the same time, these other parts of the brain will exhibit less neural activity, less blood flow, less electrical activity that might result from mass action potential firings, the inhibit parts of the brain should correspond to

everything you are not thinking about during that window of time. The inhibited parts of the brain should feature the unconscious material.

Perhaps the conscious mind is sand boxed because the inversion of my perspective that has been cultivated as the primary selection of active blocks of my active conscious neural circuit must first be created and then inhibited in order for me to have this perspective of being an individual. In other words maybe all the parts that do not lead to a conscious sense of self have to be inhibited, in order to manufacture a sense of identity.

I am also imagining a sort of natural high bandwidth wireless data transfer between brains. Speech is and body language are examples of high bandwidth transmissions, eyes and ears are examples of high bandwidth receivers. Could we also transmit information via electrical signals or electromagnetic signals via touch and or via sexual intercourse?

I am imagining secondary hidden neural network feedback loops, self-aware concept loops, that communicate with unconscious speech, or with hidden speech patterns hidden inside ordinary language.

Have you ever had a conversation and then couldn't remember what you talked about afterwards? Or only understood part of the conversation but were aware that you received information that you didn't fully understand?

I am imagining that it might be possible for brains, as universal computing machines, to run alternate consciousnesses, or alternate self aware feed back loops, neural circuits hosting the concepts that make up the building blocks of alternate beings that are hidden from the conscious mind that you know as yourself.

Of course I am suggesting that the self is a self-aware feedback loop inside our brains within the natural neural networks of our brains, and this loop consists of blocks of concepts that take turns being activated in the rich club neural circuits of the mind.

One perhaps silly idea that keeps me up late at night sometimes is the idea that there may be alternate conscious beings in your mind, that interact with alternate conscious beings in other minds is strange but I think it could be possible.

I say that because we have multiple levels of networks happening in our brain simultaneously. We have six layers of neo cortex, in each of two hemispheres, so it's like 12 half layers of cortex, you can see we have a neural network of neurons, silo's of neurons and rich club of super connected neurons, a glial cell network, that share and enhances the metabolism of the neural network and also connects the entire nervous system together from the brain to the feet to the finger tips throughout the spine, we have a mitochondrial network where mitochondria send messages to other mitochondria inside cells, you can also say that we have an ionotropic brain (electromagnetic waves interacting with electromagnetic waves) and a metabotropic brain (the chemical interacts of the brain that interact with other chemical interactions in the brain, and

we have multiple neural circuits running concurrently and possibly in patterns that are separate from one another. We have trillions of connections between cells, and perhaps we have tens of exabytes of data running through our minds concurrently every few milliseconds, and perhaps we have different spectrums of data that run past each other at different frequency rates like Delta, Theta, Gamma, Beta, Alpha, Gamma, High Gamma, and Lambda etc.

I don't know if it's plausible to have multiple minds running simultaneously in one brain but I suspect that it is possible. These alternate minds might be very abstract, or they might exist on timescales that are either too frequent or too infrequent to notice, such as beings that are really small and fast with short existences, or beings that are really long large and slow that take a really long time to process a single thought all the way through, it might take decades for some of these collective beings to self-realize and to have conclusions about something or another. Some of these beings may only appear under the influence of certain mind altering chemicals, such as alcohol, caffeine, sleep medication, or psychedelic medication. Some might only appear during incredible mental distress, mental disease, stroke, starvation, near death experiences, or other situations that cause a strenuous disorder to the normal brainwave activity of a person's mind.

It just might be that there is a vast amount of space for an incredibly deep and rich internal operating system that is simulating not only our everyday reality but also multiple universes worth of data, which might explain how people can go on fantastic journeys with DMT through multiple universes living entire lifetimes in minutes.

It could be that there is just a vast amount of mostly in accessible information in the brain, and that we don't access this information normally because it must be inhibited in our low power minds to shape the very nature of who we are and what we are doing here in this place.

I argue that it is as if we exist as the abstract relief opposing or contrasting with everything else. At the same time it is as if we are, at the cognitive level, defined by everything else, or rather defined by our relationship to everything else as all things in the cosmos are defined.

I have heard it said that the strangeness of quantum physics is that any physical object is literally defined by everything else in the cosmos, so perhaps that is true of our minds as well. Perhaps it is true of the mental construction of the ego which I feel must exist as a physical thing, in the mind, that information patterns have a physical existence in the brain, and that the self is subject to the same laws of physics that appear to govern all things. I would include a reference to Constructor Theory to argue that information can be described with equations, with Category Theory mathematics, as something that isn't separate from the physical, despite the fact that information can transfer between physical mediums, my argument is that this doesn't make information non-physical, it just makes information transformable, and that when we consider abstract models of reality, such as when we consider mathematical structures, or sets, that information isn't non-physical, but rather it exists physically represent in our brains, and that our experiences, are located in our brains, as electromagnetic waves, with spatial and temporal

characteristics, frequency patterns with charge, spin, and all the other properties that can be assigned to highly coordinated electromagnetic waves in a brain.

So in Quantum Physics everything is related to everything else, and so I would not be too surprised if it turned out that the material of a conscious mind is defined by its polarity to a differentiating set of information that is inhibited to create the contrast of a conscious distinction which is in a sense a contrast inherently, a distinction that is a disorderly disruption from the whole canvas of indistinct thought in the brain. The blank canvas of consciousness is an idea related to the concept of holism in mythology, mysticism, and religion, which is regarded as a concept beyond concepts, a concept beyond the mind (which includes only individual thoughts that divide the non-dual universe into duality by their material occurrence). Holism defines a cosmos that without the components of a mind has no thought and no disturbances, and perhaps no information.

Suppose however these hidden thoughts are not separate beings but instead they are separated thought processes. Thought processes in some instances serve abstract ideas and in other instances they might serve the collective unconscious, or they might serve some kind of collective such as a company or a country or an idea or a tribe. In some instances like as in the incident of Jonestown such a collective mind could manage to have a horribly destructive influence resulting in a mass suicide. In other instances war and genocide might result such as in the instance of the Nazis, and incident that might be characters as mass scale mental illness.

These separated-non individual thought processes might exist as the inhibited thought remnants of thoughts that have been inhibited in such a particular way so as to cultivate the tempo-spatial shape that is you, you the tempo-spatial ionotropic self-aware brainwave pattern would then exist as a sort of cookie cutter selection of thoughts models that are congruent with the shape of a self-aware individual defined by the negation of patterns that do not take the shape of a component of a self-aware individual.

So parts of you, that are unconscious are unconscious because they haven’t been selected by the brain to be apart of the conscious feedback loop of conceptual patterns that are included in the structure of your conscious self, and these parts, separated out of the necessity to construct a viable sense of individuality in a brain may exist as non-individualistic data packets, the unconscious and sometimes subconscious material of the brain that can sometimes interact with the conscious mind, and can sometimes interact with the conscious, subconscious, and unconscious minds of other people without you knowing about it, or having full awareness of it.

With Neural Lace we should be able to prove or disprove the existence of alternate beings running on brains, and begin to analyze group behavior in new ways, to understand the collective dynamics of group behavior and to understand collective mental illnesses better, so that we can treat the disturbed masses of humans who are mentally ill in great numbers and unconscious of that fact.

Speaking of Go: I think now the challenge for any AI researcher is to develop an artificial intelligence that can beat AlphaGo at the game of Go.

Go was in a sense the last board game that humans could beat AI at, and I wonder if that defeat symbolizes a hint that perhaps AlphaGo as a machine is set to exceed human cognition in general, once AlphaGo is applied generally to the whole domain of human experiences that is. Is it already capable enough to outsmart humans in all the domains of human thought provided that it can receive proper training in all human domains?

About the author: Micah Blumberg is the host of the Neural Lace Podcast which can be found at http://VRMA.io and he is a VR Journalist at VRMA Virtual Reality Media http://vrma.work he is also a bio hacking researcher working on next generation brain computer interfaces (Neural Lace) and he is the founder of the faceobok group “Self Aware Networks: Computational Biology: Neural Lace” and he admins a long list of large groups on faceobok dedicated to cutting edge technology and cutting edge science.