ASTRA NEWS

Hello everyone!

Congratulations on the second issue of our magazine "Astra News"!
I want to thank everyone who contributed to this issue!
Enjoy!

Yours,
Leonid Vishnevskiy
The cover for this issue was designed by Leonid

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How to make a Kurzgesagt bird

by Oliver Kwan

Today, I will be showing you how to draw a Kurzgesagt bird.

So first, I will be using Scratch. It's a drag-and-drop coding website, but I find that the costume editor is very intuitive and easy to learn.

So, here we go.

1. Start with a project. You will find a cat sprite. Delete it. Then, add a new sprite with this button →

2. Now, start with the biggest shape. It is obviously the body.
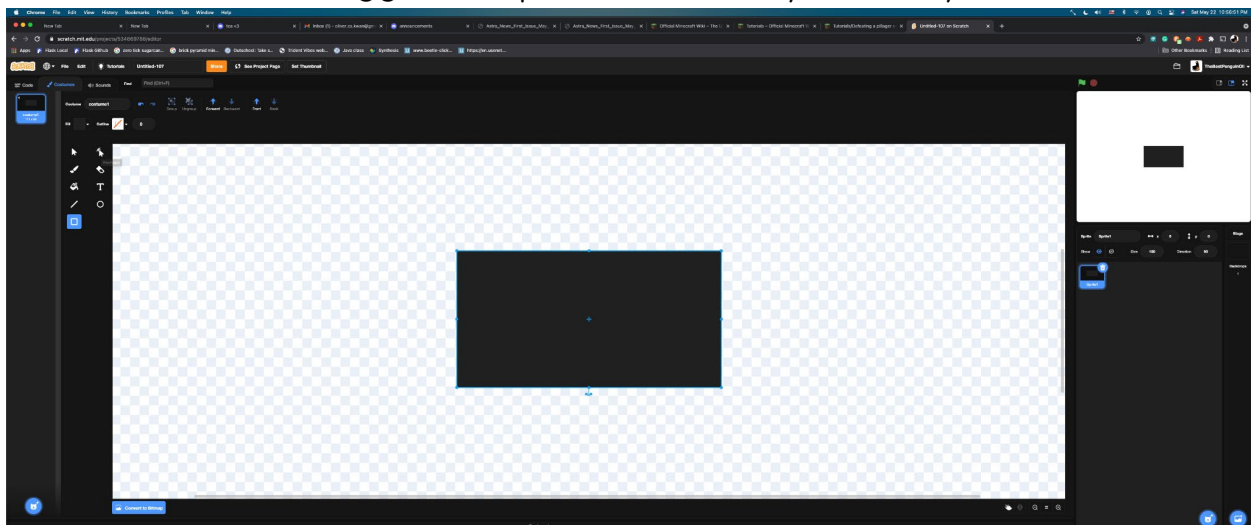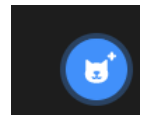
We'll use the top-right tool to reshape it.
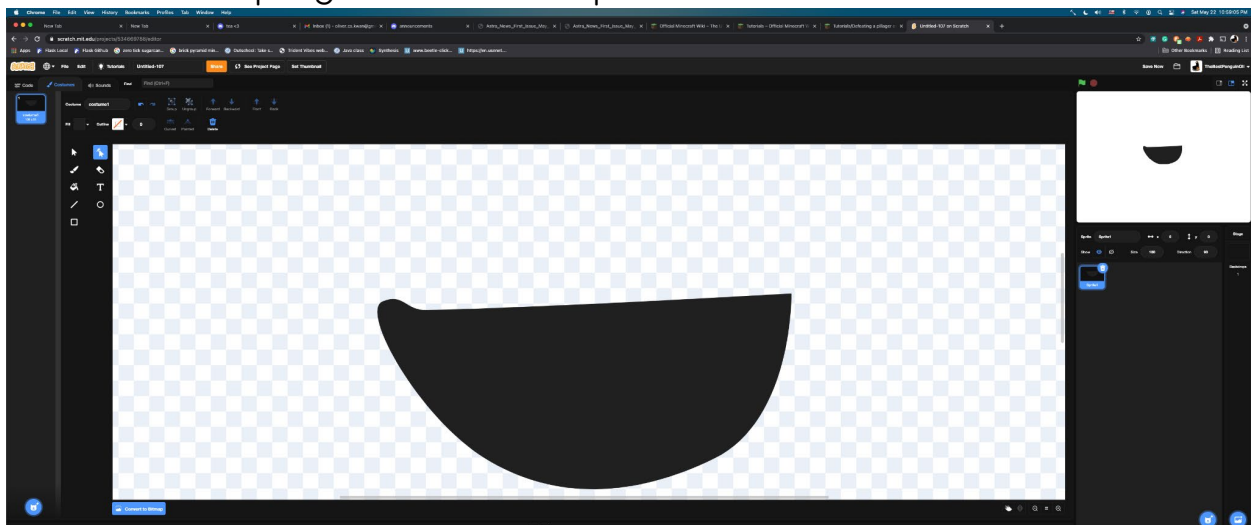
Something like this. I made this by deleting the bottom points, then I used curved points to make the rounded shape. Also, you can adjust their influence by dragging the two lines sticking out.

3. Ok. So we have a body now. So, let's start with the head.
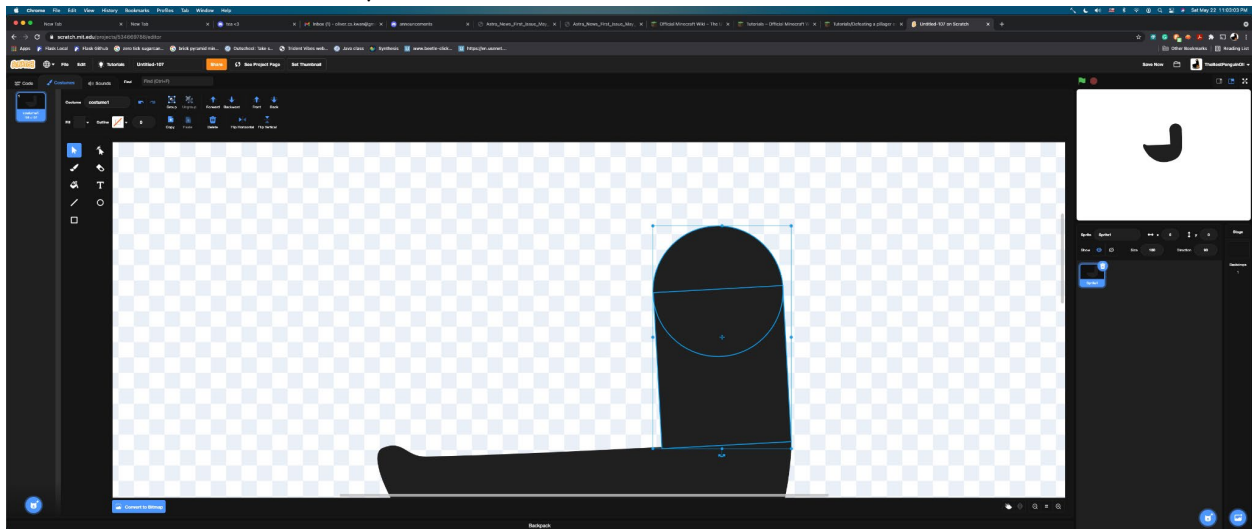
I made this by overlapping a rectangle and a circle. Now let's add a beak.
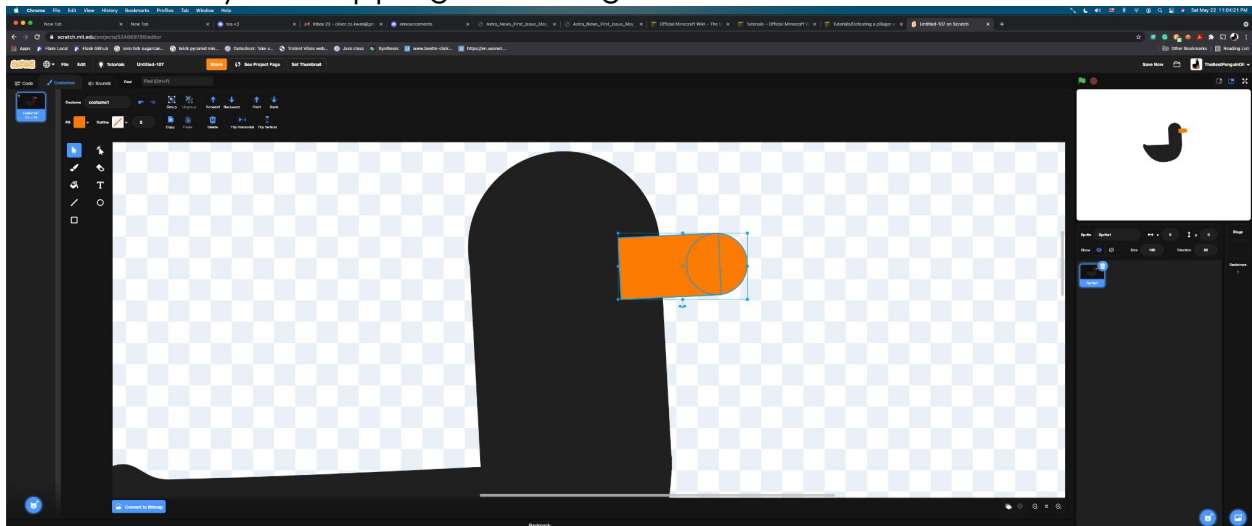
Again, I made this by overlapping a circle and a rectangle.
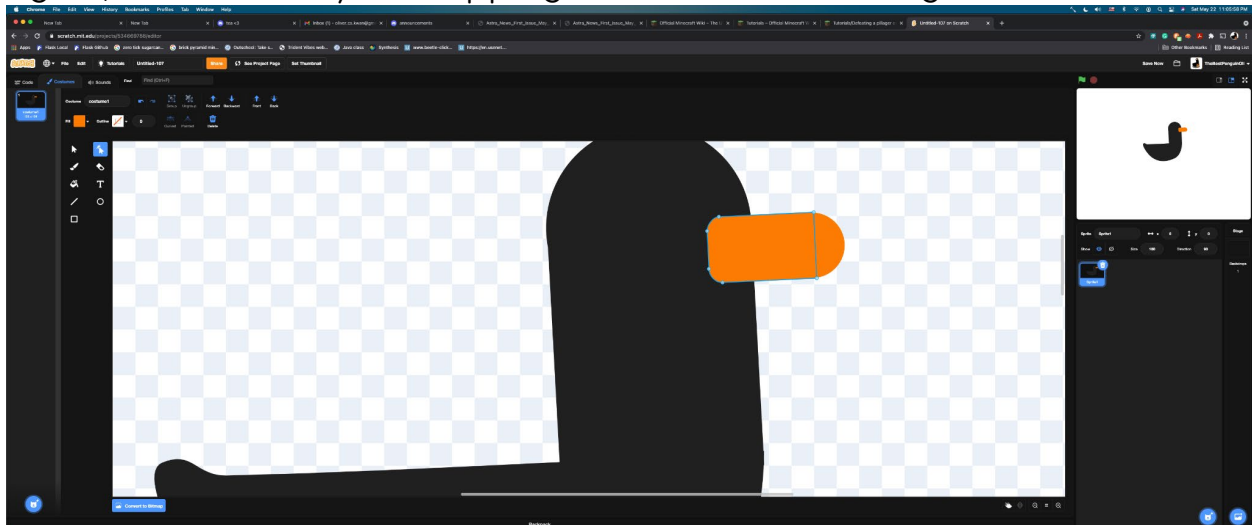
Now, here's a trick. You can delete the points on the edges and have two rounded points. This will make it a round edge. Let's give it eyes, because, honestly, it looks a bit creepy.
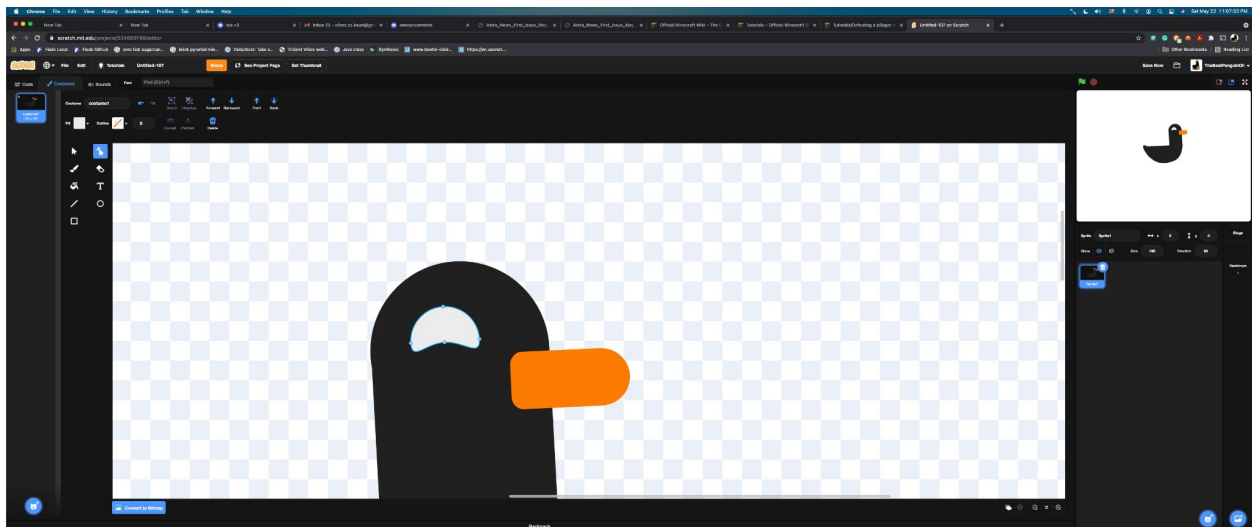
So, this time I made this eye by dragging the bottommost dot up. Now, let's make the legs. Can't make a Kurzgesagt duck without legs.
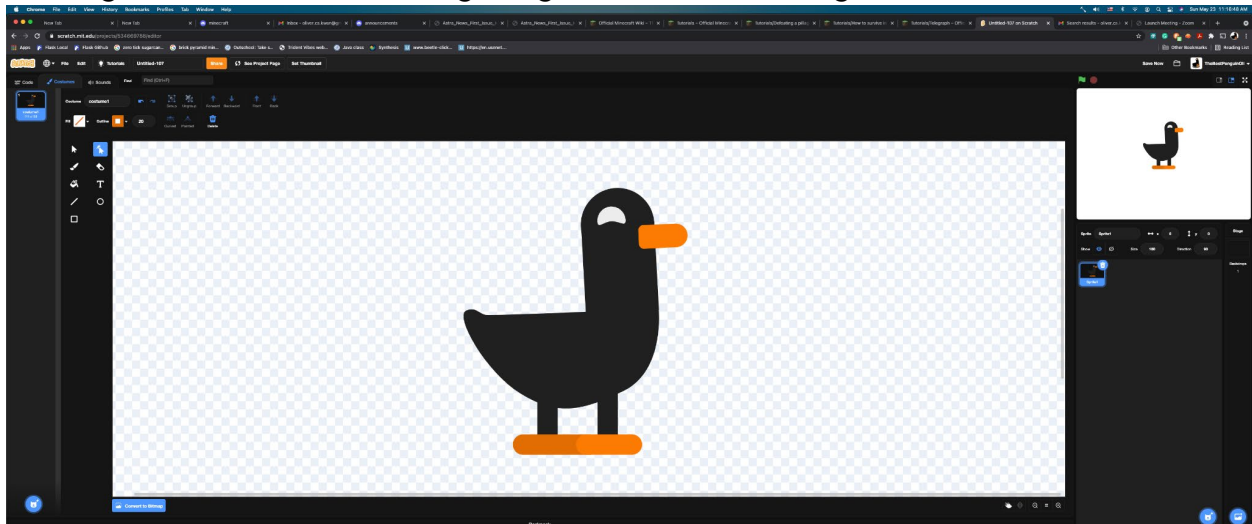
So, these are the legs. I used lines for them (tip: press "shift" to make it straight). The thickness is twenty. I typically use two lines for the leg, both aligned. One of them is a bit darker for aesthetics.

Now we've got the solid bird done. Now time for a bit of decoration.
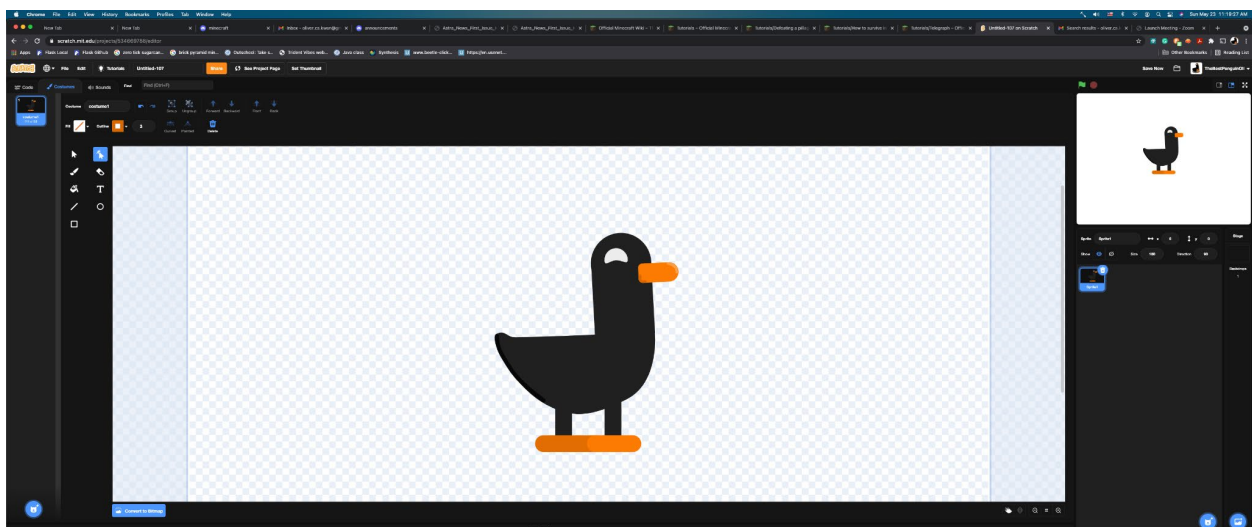
You might not be able to see it, but I added a few lines. One at the back, and two at the beak (I would typically make it a bit more detailed, but for the sake of the tutorial, I'm just going to make it simple). They can be darker/lighter than the base color. You can use the eyedropper tool to select the color and then play around with it.

And now you have finished your own Kurzgesagt bird!

You can make it cute...

Or equip it in case your friend tries to eat it.

Anyways, I hope you learned how to make your own Kurzgesagt bird!

Thanks!

Invisible scars
by Victoria Hiatt

We all have secrets, things we want to change about ourselves. Few of us understand that we are all truly extraordinary and that maybe we all are hiding things that we don't want to be seen. But instead, we live our lives never looking beneath the surface, always just assuming that everyone else is fine.

I saw the shadow stretched out on the ground before me and knew I had reached it. There in front of me stood my house. To anyone else, it would exceed any expectations. But to me, it was home to the life I hated, one of the many parts of me I wish I could get rid of. Just the sight of the house filled me with a deep sort of dread. The kind that stowed itself deep in your heart, having the power to take happy moments and turn them into ones full of pain and sorrow.

My feet silently protested as I tried to drag them up the cracked path to the door of my one-story house.

As I got there I slowly opened the dark brown wooden door, making sure not to make any noise in fear of being heard, and peaked my head through. Inside, straight ahead, was a hallway that led to the kitchen. Light seeped towards me, creeping in from the end of the hallway, spilling from the room beyond. There was no door at the end of the hallway, nothing to keep the loud shouting at bay. Nothing to keep the arguing of the man and woman hidden from prying eyes. Nothing to muffle the two voices that tore away at me, piece, by piece.

As soon as I placed my feet into the entryway I was completely surrounded by a dark gloom. On edge, I closed the front door behind me with shaking hands, leaving me trapped in a place I didn't want to be.

I wordlessly dragged my feet to the left of the door, towards my room, not wanting to waste a single word in the air already thick with tension.

As soon as I got into my room I quickly shut the door behind me, muffling the voices in the kitchen. I slowly pulled my feet through the dark room to the wall on the left of the door. The brown floorboards creaked with every step. As I got closer to my reflection in the mirror is steadily became more and more clear.

Looking back at me, from the depths of my reflection, was the shadow of a boy. His light brown hair was poking out from beneath the black beanie that sat on his head. His skin was a darker shade from months of tanning in the summer. He wore a black t-shirt with the name of a brand in bright red and orange lettering. And on his legs, he wore jeans, faded in color, and rolled up at the ankles. As I looked closer at his face, his eyes pulled me in. At first, almost completely a warm blue. But the closer you looked, the more you realized. Mixed in with warm blue were veins of dark grey, slowly taking over, not yet noticeable but soon to be. A trait that had been passed down from the voices in the kitchen.

As I stepped back in fear of what was soon to be I took note of his face. His nose was perfect. His lips were perfect. The only thing that seemed amiss were the scars all along his face, only detectable to him. Some of them were smaller, some were bigger, they only made him more beautiful. But only if they were seen like that. The map of life left for interpretation.

Quickly, I started to back away from the boy in the mirror, terror piercing inside my heart at the sight of myself.

Then as small voice said what was truly on my mind, *you're nothing*.

Instantly, I was transported into a deep pit. No one was around. The only thing that was constant was the darkness that surrounded me. This darkness wasn't normal, it was a part of me, twisting my thoughts, turning them against me.

The ground beneath me felt unstable, the world turning around me, bringing me to my knees. I felt like I had no voice in what happened to me next, like I was watching a movie projected out in front of me I could only watch.

Finally accepting defeat, I closed my eyes, giving into myself.

I felt the warmth on my shoulder before I saw the end of the darkness. And as I looked up, my cheeks stained with tears, the only thing the person staring back at me saw was the black of my eyes, draining and everlasting, finally overtaking.

No Name
by Leonid Vishnevskiy

The sun is setting, and the wind is blowing. The waves are leaping, and the boat is struggling.

We are survivors of a ship crash that happened some days ago. Or was it some weeks? Or months? I do not remember anymore. All I know is that minutes ago the four of us had just finished our food and water supply. Now, more than before, fate would decide our death. Would we die of the sea, or of hunger, or of thirst, or of something else?

I do not know.

- Look! - one of the others on the boat screamed, - there's an angel!
- Where? - shouted back our captain.
- Over there, just above the horizon.

Although risking to go under in the mad ocean, finding a free half-second had us glance at the horizon. But we saw nothing but the endless ocean and the bright sun (which was bright despite its setting).

- Are you sure you're not just seeing the sun?
- No, I'm sure I'm not. There it is again! You see that ray? That's the angels walking stick.
- Why would an angel need a walking stick? Besides, that's probably the *suns* ray.
- Angels are old. They need walking stic--
- Why aren't you paying attention to the boat!? Stop staring at the sun!
- How can I not stare at it if it's right in front of me? There's that angel... walking further from the sun and closer to us.

In reality the sun was to his right, and not in front of him. But in truth he was not looking to his right (towards the sun), which would have distracted him. Rather he was looking forward, not darting his eyes or moving his head anywhere else.

But now I am doubting if the sun really *is* to his right.

- I think I'm seeing two suns. One forward and one to my left! - I shouted.
- I don't see sun. It-- dark forest hre--. Mabe-- moon you'e-- see?- said another crewmate, the waves partly muting him.

And so on...

Eventually, I got time for some sleep, after the storm. We all took turns to sleep when the ocean was calm, and each of us slept very little, so each turn was small and rare.

Then, when I woke up, it was already daylight.

"My god! Why didn't you wake me up?" I screamed on my empty stomach, however despite my external angriness I was happy for the extra sleep.

But there was no one on the boat to hear my screams. It was as though it had never been inhabited by anyone but me: the paddles were left perfectly in their original positions, the seats showed no signs of wear, and the boat, including the part that was touching the ocean, was dry (I had tested it with my fingers), just like a boat should be. And the ocean had already calmed down.

When I looked at my hands, they looked as though they were plain dirt itself. Not as though dirt was on them, but as though my hands were… abnormal. Extremely thin. With spots. Ugly.

Then, tilting my head to look forward, I saw a beach. It looked like a natural one. On the beach people were playing. But there were no cars behind the beach, despite the streets behind looking heavily industrialized, although not modernly. And to add, the roads were dusty and made of ground, not like modern times. I saw horses galloping on the roads. Then, I saw an old-fashioned ship not far from the island, to the right. I stood up, and instantly fell over. I wanted to shout to the boat, but I felt like I had no more strength left in me. In a few minutes, I heard the shout of people: the boat had come to me.

I felt myself being taken up into their arms, and then put down. There above myself I saw spaceships flying to and thro. And I was no longer on a ship. Rather, not on an ocean ship. I was flying through, and when I turned around, I could see Earth fading out of view. Then I passed a star, a blue star. I could see it as a big detailed blue sphere, and to the human eye, I would have said, it was maybe a couple hundred jets away from me. I flew on, and then I was in a train riding through a never-never land. I had thought that normal.

Kids with lollipops, which were apparently growing on their heads, were playing outside. Candy canes grew from out of a purple ground, and it was slightly foggy outside. I could see no adults anywhere near the kids outside, except for the ones in the train. At least I assumed. I had not looked inside of the train yet. So, I turned to my left. However, I saw nobody. I stood up, and saw nobody once again.

Then I turned around, and saw something horrific. Weird. Indescribable. Unrememberable, as though every second my eyes had to look again to remember it. I couldn't even begin to understand it.

And then I woke up.

The End

"The Door in the Wall" (1906)
retold from the perspective of the people in the garden

by Leonid Vishnevskiy (2021)

In the short story "The Door in the Wall" by H.G. Wells one of the main things is a green door that leads to an enchanted garden. One cannot be sure if it is an imaginary door or not. I felt compassion for the main character Lionel Wallace, but felt sad that he didn't think about the feelings of the people in the garden. I decided to re-tell the story through their eyes and answer the question: in what door did Lionel go through at the end? If you didn't read H.G. Wells story yet, please, read it first and try to answer this question yourself before reading my retelling. I am sure that you will be intrigued and I don't want to spoil this experience for you.

If you prefer not to read my retelling, but rather listen to it:

"The Door in the Wall" retold. MP3 (5:25)

For the illustration I used the image of the keyhole from Magistral Villa in Rome.

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For as long as we can remember, we have lived in this garden, but we do not know how it was made. All we know is that we have existed for an unknown time, in our never-changing lives. Yet, we are all happy all the time. But we began wanting to meet new people. We had known each other for a time that I do not know, and our routines each morning were always the same. Our ancestors, the ones who created this garden, gave us a door; a green door. A beautiful green door.

We didn't know what it does, as we could never open it. But one time we found a small note by accident, and just by touching it we learned how to use the green door. We learned that this green door is a door to another world. We cannot open it to go there, but we can bring it to that other world: A world called the "outside world".

We had never heard of the "outside world" before, but we decided to open it there anyways. For the first time, our routines in our lives changed. However, the door would only show to *the one*. We tried to open it several times to the outside world in different locations, thinking that that world can't be that big; just a few locations guarantee *the one* would walk through the door. But over time, we learned that their world is vast, and also people would walk into it and perish from it. At least, their souls would. Uncertainty grew in us as to whether *the* one was still there. In our world, this kind of elapsing does not exist. Time here, is much different. It's here, but it doesn't go like in that "outside world". We thought it must be a wonderful place; as they could maybe understand time.

Oh, one thing I forgot to tell you. From that small note that we had found, we learned that *somehow*, we would be notified when *the one* appeared, and where. We did not understand the first part, *when the one* would appear, as we have always been *here*. We were notified, but we for some reason did not know how. We just, *were* notified.

We didn't even know it popped in our heads, yet then again, we *did* know. It is very strange how it happened. Unexplainable, un-understandable. Maybe those in the "outside world" would understand it. We then decided to open the green door to the outside world, sometime after we were notified. We waited for a while, until the door started opening. We saw the *one*. Or who we think was the *one*. Behind him, while the door was still open, we saw nothing but our own garden. We greeted him, and he went to play with our little people.

When he was taken away by a woman with a book, we wanted him to come back; we were sad that he was leaving. We were *un*-happy. He, the *one*, must have brought in these emotions from the outside world. Because when our own would go away somewhere else, we would still stay happy; no matter how much we loved the one who was going away. We learned that the "outside world" may not be as fabulous as it may seem. Then again, maybe they enjoy this; these kinds of "feelings", and we would too if we were there, in the "outside world".

Back to the garden, the woman took him away, led him away; and sat him on a bench. In her lap was a book, and in the end, we did not know how, he, *the one*, disappeared. We cried and cried, (again, these "feelings" came to us) until we got the thought of opening the door again. So, we did. In a different location each time, where *the one* was. But *the one* never came in. We opened it and opened it, but we did keep intervals of time in between the openings, if that's understandable, the meaning of *time*.

But then finally, we got desperate; we had too much sadness in ourselves. We opened the door again and again, and left very small increments of time in between each of the openings. This is when we began to understand time, for once. Finally, we began to understand it.

Also, another thing: When he, *the one*, was inside the garden, we could feel as if he knew what time meant. Maybe our vague understanding of time, and our sadness, was the "outside world" from the one bringing itself into us. But then, when in that desperate time period we opened the door once again, our garden was already crumpling; vanishing. Right when the door opened *into* our garden, the garden was gone…

Our souls still exist, here, yet we do not know where. They still do exist. We cannot identify this place at all, and we cannot call it anything, not even words such as "something" or "the void". But after our garden was gone, we somehow understood that the *one…* was also gone. No longer in existence. About non-existence, we've also been noticing that some of our souls; they are vanishing. Maybe it's because of the "outside world", or it…

The End

Simple and Beautiful Definitions
designed by Leonid Vishnevskiy

I want to share a game that I came up with some time ago. I named it "Simple and Beautiful Definitions".

RULES OF THE GAME

We select words to define, and then everyone makes up short definitions for them. You have to consider for yourself that they are beautiful, they should not necessarily be «complete» like those in dictionaries, but the definition has to be correct in what it says. Simple and Beautiful Definitions should be the combined product of the disciplined mind and the creative mind. Let's try to define the word «Sun» as follows: The sun is a cube in space. The mistake here is that the sun is not a cube, you have to stick to the real characteristics, qualities, etc. However, you can say that «the sun is a cube» if you somehow speak metaphorically about it.

WHY TO PLAY

Sometimes when I am in the mood/inspired, I find this game easy, and sometimes I don't find it easy. I think the aims of this game are:

o to learn how to solve real-life problems rationally using creativity when you're not inspired, when you're not in the mood;
o to learn to look at things that we are accustomed to in a new way, to be able to look at them as though we are seeing them for the first time, as it allows us to have thoughts different from our "accustomed" version of them, making us able to do new things with them, making us know them better.

One of the ways to learn the above by playing this game is to create "algorithms" in your head for the game. These algorithms use the disciplined mind, thinking of a specific thing, e.g., "most simple beautiful definitions look like…so do yours like that". Or, not using algorithms, you could use the creative mind by creating some sort of tips that set you in a thinking direction differing for each word that you're trying to create a simple beautiful definition for. I'll give you examples of, to me, simple and beautiful definitions that I came up with at the time when I hadn't shared the game yet.

Circle - It is something with an infinite number of corners, and if you draw a ray from any one point to another perpendicular point, the distance to them will always be the same; nothing can change that if it remains a circle.

Pencil - Something that makes a gray material appear, which stores down our memories or thoughts.

Campfire – Something that eats wood, leaves, and other things. With its food it grows, and without it dies quickly. Water and sand are its poisons.

Plane – A big bird that flies to transport others. It does not fly where it wants to, but where the others want to.

Computer – A brain that is superior in math but not in creativity.

Computer mouse – A way for the creative brain to control the computer brain; to combine them.

Later, I shared this game on Discord, and we started to play it there. Join us! Here is most of what we wrote there (in the order that the definitions appeared for each word).

HOUSE
- A place where we dwell from dangers. It is made by shoving dangers away from a land where a house is built. (Leonid V.)
- A place in which we consider our safe place, a place where we are protected physically, but not from our minds. (Victoria H.)

LIGHT
- Darkness being expelled and replaced with things that help us navigate; and make the surroundings livelier. (Leonid V.)
- The opposite of dark. A time/place where all good is considered to dwell. (Victoria H.)
- A place where you can be calm, think. (anonymous)

AIR
- An ingredient necessary for most life; one of the recommended ingredients in the mixing bowl that makes life possible. (Leonid V.)
- The thing that makes life possible. Without the chemicals that we call air we wouldn't be here today. But with the chemicals in the thing we call air our life could be over. (Victoria H.)

ANIMAL

- A life that relies on other lives' resources to live, both lives lower than itself and at its level; and it itself uses them to become superior. (Leonid V.)
- A type of life so majestic it's hunted down, just so humans may continue to embrace its beauty. (Victoria H.)

EARTH

- The place we call home. There is no obvious evil and good in this place. Only a mix of grey. (Victoria H.)
- A little "sphere" on which we live on in the universe, and we call it our home. (Leonid V.)

DARKNESS

- The time/place evil lurks. Waiting. Nowhere you turn in this place are you safe. (Victoria H.)
- The absence of good or light. Be cautious in it. (anonymous)
- Where all what our eyes see is uncertain. (Leonid V.)

CANDLE

- The center for warmth in uncertain times. Though a steady light, nothing will stay stay the same near this object as things can change in a blink of an eye. (Victoria H.)
- A thing that expels darkness, until the "timer" runs out. (Leonid V.)

ART

- Art is expressing thoughts visually, usually a scene of some sort. There is a phrase that goes 'A picture is worth a thousand words'; art is true in this manner as well. (Leonid V.)
- A beautiful way to express your deepest feelings (anonymous)

BED

- A place where we can replenish our energy in comfort. (Leonid V.)
- The place we consider safe, and a place to close our eyes as the warmth drags us into a dark slumber. (Victoria H.)

CLOCK

- It allows us to see the time of day, but not time itself. (Leonid V.)
- The thing that marks the hour, whether happily or sadly. The pace never changes, though it does in our minds. (Victoria H.)
- The one and only way to allow us humans a tiny window into the grand, paradoxical, vastly beautiful scheme of Time. (Howard, HyGuardian)

BOOK

- A way in which we share our stories. (anonymous)
- A way we can look into the thoughts and memories of our ancestors. (Leonid V.)
- An infinite story pressed into finite form, a thing to take one away from this world and into another, a leap of faith. Anything could be inside, waiting to be discovered. Something beautiful or terrible. The weakest ink becomes the strongest power on Earth. An unconditional friendship. Anything imaginable. (Howard, HyGuardian)
- An inside look into the minds of others. One of the only things to transport you into another's perspective, pulling the emotions of theirs into yours, and turning their thoughts into yours. (Victoria H.)

CITY

- A place that inhabits many people; known and unknown. (anonymous)
- Where if people leave it, nature will conquer it. (Leonid V.)

LOCKED

- Without a piece of the puzzle, we cannot reach the destination. (anonymous)
- A trusty guard until you feed just the right thing to him. (Leonid V.)

FRIEND

- Someone to stay by your side during some of the hardest of times. Doesn't have to be the best of friends, just someone that may bring smiles. (Victoria H.)
- Someone who knows the secrets of you that not your family nor strangers know about. (Leonid V.)

MOUNTAIN

- A land that tries to reach out to space; as though it is curious. (Leonid V.)

NIGHT

- When the barrier of sight is removed between space and us. (Leonid V.)
- A time when we feel uncertainty often, but then realize the beautiful show above us, space. (anonymous)
- Only there for the bravest of souls willing to face the challenge. There are no barriers only an endless beam of potential. (Victoria H.)

MOON

- A sphere that follows us around and shows up no earlier than the late evening, however sometimes it is able to hide itself. One can think that it's a shy little thing. (Leonid V.)

OCEAN

- Where from a distance it looks infinite and identical everywhere, as though if you were to go there and you were far from land and there was no sky or outer space visible, you would not know any other direction than up and down. (Leonid V.)

PAINT

- It prefers to show itself (Leonid V.)

PLANT

- It usually moves too slow to be caught by the human eye (Leonid V.)

WATERFALL

- A highway for water. (Leonid V.)
- The end for many and a danger to all. (Victoria H.)
- Water that well, FALLS (anonymous-2)
- Water that has no set path, only a direction. (Victoria H.)

NOTES

- Some make you go from a walk to a jog en route to memory. (Leonid V.)

BICYCLE

- Where your walking becomes riding by turning the wheels. (Leonid V.)
- One of the many amazing things humankind has created to turn force into less force. (Howard, HyGuardian)
- An escape for many, an excuse to only think about what is in front of you. (Victoria H.)

"Solaris" (1972) directed by Andrey Tarkovsky

movie review by Leonid Vishnevskiy
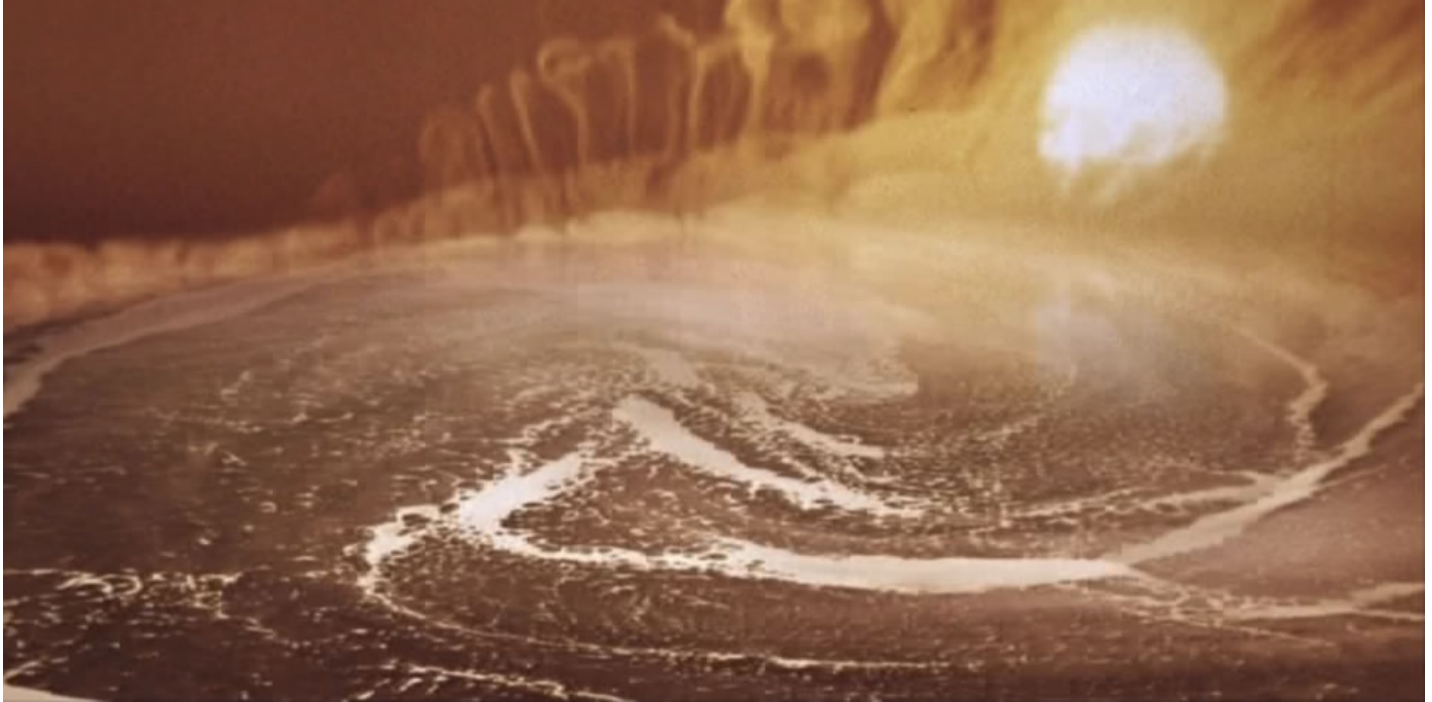
A planet called Solaris. Made up of only the "Ocean". An astronaut named Burton was on the planet and reported seeing strange things there. Nobody believed the astronaut, but he does nonetheless go to see Kris, an astronaut who is going to close the almost-completely-abandoned Solaris research station. Burton tries to convince Kris to not close down the research station and not to send radiation blasts into the Ocean, as it is a living thing Burton says. Burton didn't succeed in convincing Kris and in any case by the time that Kris arrived the radiation blasts were already done. Because of that (we assume) the Ocean sent in "guests" to the station, who were fake people made of neutrinos, which could only exist on Solaris. The second time that Kris received Hari, his dead wife, as a guest, he began treating her like his real wife. The first time he received her, he got scared (he was not told yet of the guests) and sent her away on a rocket.

Kris had changed since he had arrived on Solaris.

Solaris makes you wonder many questions. What is the Ocean? Why is everyone so "shaky" before they tell Kris of what is happening? Why does the Ocean respond to the radiation blasts in such a way? You may find yourself pondering, trying to solve these questions. And yet many still remain a mystery, if not all.

For instance, one of my *theories* to the second question is that maybe it was like that only to Kris's eye. But why would it be like that only to Kris's eye? Perhaps it is because the rest of the characters are part of the Ocean now, and Kris has to understand what the Ocean is doing before understanding the rest of the characters on the research station, who are part of the Ocean. But while this may sound logical, there is nothing other than that logic to prove or disprove it. I am sure that there are many other logical theories that can be made about this, and yet I am also sure that none of them, like mine, would have any proof or disproof other than their logic. And that is not enough, especially when there are many of these logical theories. The more there are, the more they start eliminating each other, as there probably has to be a single right answer, and not many "logical" theories. If there are many logical theories, then it becomes less logical that a specific one is correct.

How do questions like "what is the Ocean..." make Solaris unique though? Aren't these just questions with not enough information, just like in many other areas of life?

This is not the same as "Mark brought 3 bananas. How many apples does he have now?". The questions of Solaris are much more interesting. Why? Because the movie (at least for me) touches you. That is, it interests you, and it is filmed in such a way where you feel the movie. The music coupled with the visual side of the scenes makes you feel the movie, feel the Ocean.

At the end of the movie, Kris (although we cannot be sure that it is not a copy or a "guest version" (the guest version could be made for the island instead of the research center) of Kris) is on an island in the Ocean created after the research station sends Kris's thoughts into the Ocean. On the island it is as though he, or his copy or his "guest version" has arrived back at his house on Earth. Why did the Ocean make this island? For what reason?

One could think that it was to show Kris's thoughts back at the research station. But maybe it wasn't necessarily to show Kris's thoughts, rather it was the Ocean absorbing them and making them part of itself, as it does seem a likely thing to do when you are sent something in that form.

Besides, the theory about it showing Kris's thoughts has not too much proof, as the question of why would it want to show Kris's thoughts remains unanswered.

Maybe the island is a new sort of "research station", gotten from Kris's thoughts. It may not physically be a research station, but for the Ocean it is, and so it sends a "guest version" of Kris onto the island.
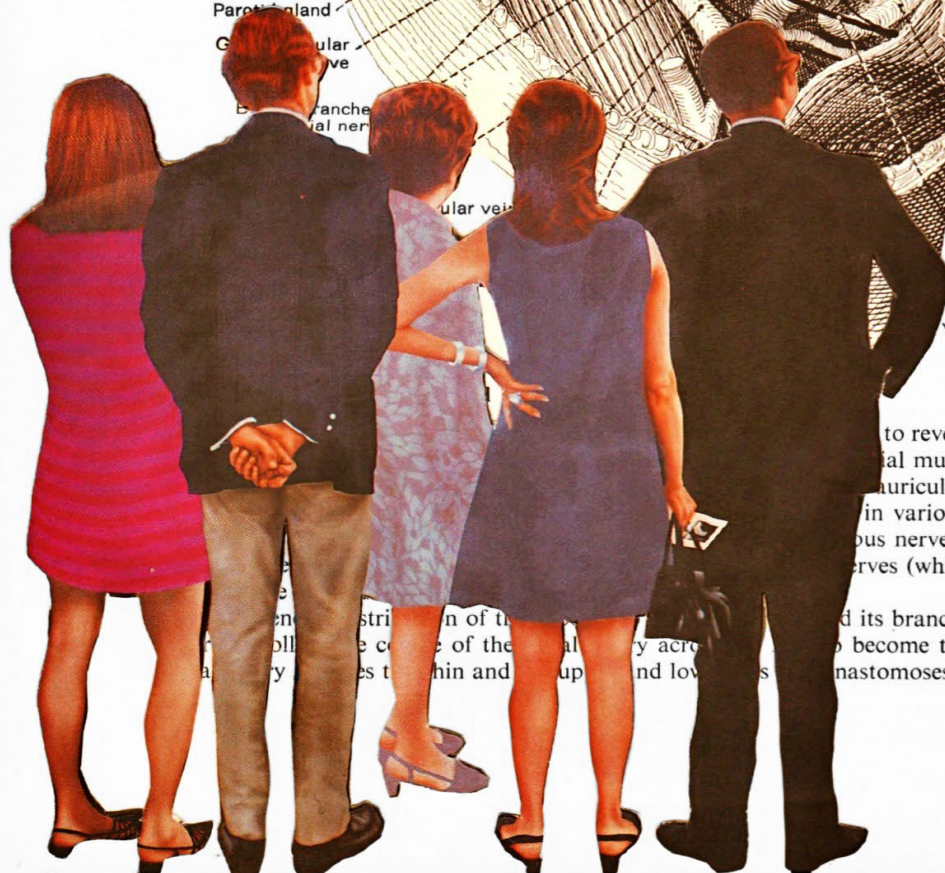
There can be many more theories as to what the Ocean did and why the Ocean did it. And there can be many more questions.

This is a movie that I love and cannot fully understand.

The End

Communicating nerve between the trigeminal and greater occipital nn.

Temporoparietalis muscle

Parietal branch, Superficial temporal artery

Superficial temporal artery

Occipital artery

Great occipital nerve

Occipitalis muscle

Auriculotemporal nerve

Post. auricular artery
Auricular br., Vagus nerve
Temporal branch, Facial nerve
Transverse facial artery
Zygomatic branch, Facial nerve

Lesser occipital nerve

Facial nerve

Parotid gland

G___ ular ___ve

B___ ranch___ ___ial ner___

___ular vein

Supraorbital nerve
Frontal br., Sup. temporal artery
Zygomaticotemporal nn.
Frontalis muscle
Zygomaticoorbital artery
Supraorbital artery
Supratrochlear nerve
Supratrochlear artery
Supraorbital nerve
Medial palpebral artery
Infratrochlear nerve (ascend. br.)
Communicating nerve
Dorsal nasal artery
Infratrochlear nerve (desc. br.)
Zygomaticofacial nerve
External nasal nerve
Angular artery
Infraorbital artery
External nasal branches (infraorbital nerve)
Infraorbital nerve
Superior labial branches (infraorbital nerve)
Zygomaticus major muscle
Buccinator muscle
Buccal nerve
Mental nerve and artery
Inferior labial artery
Depressor anguli oris muscle
Facial artery

Mandibular branch, Facial nerve

Facial vein

AI. Are our emotions real?

to reveal the branches of the facial nerve (black) which ___ ___ial muscles of facial expression. Identify the temporal, ___ ___uricular branch is not shown.
___ in various colors: ophthalmic (yellow), maxillary (blue) ___ ___us nerve of the anterior and lateral face, but is also the ___ ___rves (white, not colored) supply the occipital region and ___ ___e distri___ ___n of t___ ___ its branches, the zygomaticoorbital and transverse facial ___ ___oll___ ___e co___ ___e of the ___ ___ary acro___ ___o become the angular artery. Among other structures, the ___ a___ ___ry ___ ___es t___ ___hin and ___ ___up___ ___nd lo___ ___s ___ ___nastomoses with vessels emerging from the orbit.

AI. Are Our Emotions Real?

by Leonid Vishnevskiy

In this article I share my thoughts about AI, and specifically whether AI's emotions and our emotions are real. That is, if emotions are not just a complicated algorithm that works as a side process of something else. I wanted to start talking about AI and make theories on it without having to wait until I have a big amount of knowledge on the subject. Of course, there may be some mistakes in the article. For instance, I talk a lot about reflexes as another emotion, but I may be missing a piece of information here. What if I am talking about reflexes not knowing that it's something else that I should be talking about instead? I suggest that reflexes are an emotion. I also do not use the exact definitions of emotions and feelings, but rather how they are used in everyday speech.

Please, consider this article as a blueprint.

Summary

Are our emotions real? Are our emotions just algorithmic? Does AI have real emotions?
Can there be emotions that humankind does not know? Why not? It would be hard for us to imagine emotions that we do not yet know, that we are not aware of yet.

I suggest that reflexes are an emotion, because just like our "mental emotions" are a feeling to do something, so are our reflexes a feeling to do something. Maybe "mental" and physical (reflex) emotions are not separate because our brain is a physical object and because some emotions are crosses between mental and physical emotions, thus implying that that emotion is actually under one group and not two, as then it would "cross" between them. That might mean that mental and physical emotions are the same thing, i.e., group.
I think that emotions could be brought to this analogy: In our 3D universe, we have first of all 3D space (all emotions), then the axis's (happiness, sadness and reflexes), then their positive and negative sides (important in emotions for only that the sides are different, not for their specific differences. These sides are each another emotion grouped into its main emotion (axis), and also the main emotion could be one of the sides) and finally the values (e.g., there are many different ways to express happiness, and each of those ways is a "value"). If the theory is correct, then we know what emotions consist of. Our and AI's (at least future) emotions consist of this theoretical structure of emotions, so we and AI have real emotions.

Article

Artificial Intelligence. We cheer it, we fear it, we make it smarter. Whether that is good or not is not what this is not what this article is about.

Artificial Intelligence is, roughly speaking, a sort of intelligence that can far surpass us, learning things faster and faster, able to solve problems faster and faster. We can already have simple conversations with AI, and we know that it learns very quickly. Soon it may become indistinguishable from humans.

But is this real? That is, will AI, if it does become "human", actually be human, or just a copy of humans like a voice box copies human's words with emotions that the voice box itself does not understand? To answer this, we first have to answer another question: are *our* emotions real?

After all, maybe our emotions are just a tangled web of how to react in certain scenarios (our morals, for example), with an algorithm to "create" all of our other emotions. What makes us think of our emotions as unique, that is, as *real*, throughout so much of our lives? In other words, are we alone the creators of our emotions, the ones that have set all the rules for them? Or are emotions something else that we have not yet grasped?

Part, or possibly all, of the reason as to why we think that our emotions are real is that these emotions are *ours*, we are the ones who experience them, so we tell ourselves that they are real. But maybe this is not the reason. I can imagine that if a robot disguised perfectly as a human would star in a sad movie, your reaction would be the same as if a human was starring in the movie, just so long as you don't know that it was a robot starring. So, it is not just that we call the emotions in us real, we call any emotions that are the same as our emotions but not necessarily in a human, real. However probably just so long as we don't realize that it is not coming from a human.

A question: could there be other emotions? And if so, how can there be other emotions? Or are there no other emotions? It is difficult to imagine other emotions, especially since by imagining them they become another one of our emotions. But that doesn't mean that there aren't other emotions, for example those that we cannot imagine.

Let's make an imaginary animal: It can only feel pain or happiness. It does not feel sadness or anger or anything else. It would probably be hard for it to imagine other emotions. What is sadness, one of the emotions that this animal does not have? It is when you *mentally* feel bad about something, you worry about it. The reason as to why this question is important is that we may find out how the animal would discover sadness, an emotion that it does not have, and thus we could find emotions that *we* don't have or don't realize.

Now we may have discovered something: you can feel mentally and physically (as sadness was described as a mental emotion, and there would have been no reason to include "mentally" if it wasn't needed. But yet my brain felt it right to include it, and the only reason it would have a reason to be there is if we don't only feel mentally). A physical emotion is very hard to imagine. Is it actually an emotion? Is there such a thing such as a physical emotion? Maybe there is. But without a concrete example, it may be hard to understand. Let's think about what an emotion is. To understand emotions, we need to understand why they exist. We think that we do not have something in our bodies for no reason if it is meant to be there, because then why would it be there? It would be a waste of energy to grow it. Most likely, the same goes for emotions.

So now we think that emotions are needed. Let's think of what for. Imagine not having emotions: If someone does something bad to you, and you feel no emotions towards it, then you may do nothing about it. And this person may continue doing bad things to you because you do nothing about it. We would react if we _felt_ like reacting. And without emotions, we cannot feel like doing something, since emotions are the things that create feeling. And thus, no emotions could be bad for a person's survival. But what if no one had emotions? Could that bad person, being without emotions, still do bad? Yes, possibly less badness though, or possibly more badness. If he feels bad about his actions *with* emotions, then he would feel better about them without emotions, making him more likely to do those actions, and vice versa.

This explanation of why emotions are needed sets more of a basis for mental emotions, because our brain is the only one that *feels* like doing something. Or is it the only one? Our reflexes do as well. Those might be our physical emotions. If our body *feels* too hot, then reflexes take over, saying little to nothing to the brain. If they worked much more with the brain, you would have time to think about the pain and decide what to do. Reflexes are not really where our mental emotions are. Thus, our reflexes are our physical emotions as they *feel* like doing

something while not using the brain (our mental emotions) all that much (while we do also have reflexes, i.e., we have not discovered emotions that we do not have, this is enough for this theory of mine).

We can say that some emotions are crosses between physical and mental emotions, because of the emotions that they activate (e.g., physical pain activates sadness and/or anger, mental emotions) being opposite to the activator emotion itself. Their cross, however, may not be a cross, but rather just that mental and physical emotions may be one thing in the grand scheme of things. This divide between mental and physical emotions is shortened even more when we realize that the brain and its structure are physical.

There is one interesting theory about this: we live in a 3D world, right? So there are *three* dimensions.
There is *one* 3D universe (as in *the* universe), and if there is *one* mega group of emotions, then maybe this is what is happening: there is one mega group of dimensions (which has all three dimensions, bounded together into one group), and it has 3 sub-groups, each of which is a dimension: x, y and z. The same for emotions: there is one mega group of emotions (the mental and physical emotions as one group, as we are exploring right now if it was this way), and three sub-groups. But what are these sub-groups?

They may be the groups that you could place other emotions into (e.g., happiness and reflexes as groups). We have happiness, our reflexes, and something else… what is it? My guess would be that sadness is in another sub-group of all emotions. Sadness would include sadness and anger. We have happy emotions, sad emotions, and something that could be called "in between" them (our reflexes).

In these sub-groups of emotions, we have placed more emotions inside of them (inside of our x's, y's and z's in the 3D world analogy). How would this be possible in our 3D world analogy? There are negative and positive axis's for each x, y and z. I.e., each has two. Reflexes harbor extreme pain and scare, happiness has happiness and laughter, while sadness has sadness and anger. But there is no place for love here, as that would cross the "limit" of two. Or is there?

We know that there are many types of anger, and happiness, and laughter and so on. That is, you could show your happiness many different ways, and each of those ways is a "type". These could be the "values" for each "axis". I think that we can all agree that, if we remove practicality, that is the word "practically" and think of only what is the real truth, then there are an infinite amount of types of anger, and happiness, and laughter and so on, just as there are an infinite amount of numbers in dimensions. Love could be a type of anger, or happiness, or some other emotion, and not necessarily a stand-alone emotion. It might just be a sub-group of types that stands out, but not enough to be a stand-alone emotion.

We do not need to explore that, however, as now we know enough to at least theoretically answer the question of the realness of emotions. We have *possibly* broken down emotions into different things that we can grasp. At least we think that we have. I cannot be sure of how well this theory works out.

So emotions, if my analogy was right, are analogous to our 3D universe. Now, are emotions *real*? We can now ask this following question to answer the long-unanswered question of the realness of emotions: Is our *3D universe* real? Because if it is, then so are emotions, as emotions, once again *only* if my theory is completely right, have the same principal structure of our 3D universe. If the structure of the universe exists then so do emotions, as they have that very same structure. Some theories say that our universe may not exist, for instance that our universe is actually someone's dream. This may still make it real[1]. But in any case, emotions *do* exist in our minds or reflexes at the very least, don't they? Or do they not? That is, if they do *exist* there, then they exist in general, right[1]?

In the end, at least from my verdict, we get that emotions are real. But what can be put into emotions? That is, what *counts* as emotions? Does AI actually have these emotions, or not? It may seem like we've just finished a walk around a circle and are restarting it but just going in a more "zig-zag" path, but trust me, we weren't and aren't walking in a circle.

Emotions, as we have discovered, at least we *think* we have discovered, are analogous to the 3D universe, specifically to the dimensions of it.

My explanation says that emotions start off from the values of the axes, then at whether the axes are positive or negative (the important thing being that the negative and positive sides are different, and not the *specific* difference that one is positive and one is negative), then each axis itself, and then all three of the axes together. Or, away from the analogy, my explanation starts off from the type (or "value") of a specific emotion, then emotions that are related to it (the positive and negative part of the axes), then the group that it falls under (x, y *or* z), and then what all emotions are in general (x, y *and* z). And if an AI can meet these requirements, then its emotions should be real. And it does meet these requirements, only the AI would be using the 3D world analogy a bit more than humans do, as for the infinite amount of types of specific emotions it would probably have to use numbers, just as the 3D world analogy shows it. That does not matter for this article however.

This explanation sounds like a technical thing, which emotions are "supposed" to not be. But so does talking and art. They are "supposed" to not be technical. But AI has already proven itself, at least in art/picture-making[2], despite it being technical. Thus those fields are probably technical as well, as we *know* that AI is technical, so then the fields have to be technical as well. It cannot be that AI is un-technical and the fields are un-technical as well, as AI can't *be* un-technical. Or at the very least those fields usually *are* but don't *have* to be un-technical.

To sum it up, AI does have emotions, or if it doesn't then it will with enough effort. And if it isn't with emotions yet, then it is already on the way there. But is this theory even correct? If this theory is wrong, then do emotions, probably considered to be one of the most un-technical things, actually real, as their host, the brain, is technical? Are emotions just a side result of some other process? Will AI have emotions that we don't have (even if reflexes are an emotion, we still do have them, we just didn't know that they were an emotion)? Are there even more emotions? Could there be an infinite number of emotions, and not just an infinite number of types of emotions?

[1] See "Quantum Talk" in the first issue of our magazine, "Astra News"
[2] https://nv-tlabs.github.io/DIB-R/files/diff_shader.pdf