[](https://www.technologyreview.com/2018/03/13/144721/a-startup-is-pitching-a-mind-uploading-service-that-is-100-percent-fatal/)**The Neuroscience of Mind Uploading and the Psychology of Digital Afterlife.**

*Abridged from www.popneuro.com , June 30 2020*

**PASSAGE à lire n° 1**

(…) Recently, ideas about life extension **have taken (1)** another turn. Enter the world of mind uploading, and the promise of a digital afterlife. Here, the idea isn't to make the human body **obsolete (2)**, but rather, to make it **everlasting (3)**. Why try to cure an **ailing (4)**, biological body when you can just **copy (5)** the essential bit (e.g. your mind) and  **upload (6)** it onto a virtual interface? The idea is to upload a person’s mind in its entirety into physical storage. And once there, **migrating (7)** the ‘person’ into an avatar within a **simulated (8)**, digital world.

**QUESTION 1**

* Choose the word that would be needed to logically fill in the first blank **(1)**:

1. Have been taken.
2. Would take.
3. Have taken.
4. Had been taking.

**QUESTION 2**

* Complete the paragraph with the appropriate terms from the list below:

*a- simulated / b- migrating / c- copy / d- ailing / e- everlasting / f- upload / g- obsolete*

1. = \_\_\_\_\_\_\_\_\_
2. = \_\_\_\_\_\_\_\_\_
3. = \_\_\_\_\_\_\_\_\_
4. = \_\_\_\_\_\_\_\_\_
5. = \_\_\_\_\_\_\_\_\_
6. = \_\_\_\_\_\_\_\_\_
7. = \_\_\_\_\_\_\_\_\_

**PASSAGE à lire n° 2**

Ideas about a digital afterlife have inspired a wave of science fiction, from Johnny Depp’s *Transcendence*, Amazon’s *Upload*, to several *Black Mirror* episodes. But **how far** **(1)** are we from these fantasies? As scientists **team up with (2)** Silicon Valley giants, could a digital afterlife be possible?  Where to start? Mind uploading **is predicated (3)** on monism, the idea that the mind and the brain are fundamentally the same entity. That is, “you”—in all of your thoughts, emotions, memories and human complexity—*IS* your physical brain.

**QUESTION 3**

* Choose the terms that would be needed to logically fill in the blank **(1**):

1. how long
2. how far
3. how many
4. how often

**QUESTION 4**

* Choose the terms that would be needed to logically fill in the blank **(2)**:

1. team up with.
2. split up from.
3. spill out into.
4. tilt down to.

**QUESTION 5**

* Choose the terms that would be needed to logically fill in the blank **(3)**:

1. is reposing.
2. is entailed.
3. is predicated.
4. is touted.

**QUESTION 6**

* Decide whether the following assertion about this passage is TRUE or FALSE:
* *Mind uploading hinges on the premise that differentiating between mind and brain is a mistake.*

1. TRUE
2. FALSE

**PASSAGE à lire n° 3**

Based on **a range of (1)** findings from neuropsychology, **as well as (2)** neuro-imaging techniques such as fMRI, EEG, and TMS, **this is consistent with current scientific thinking**. **So far, so good**. If your aim is to localize a person’s essence for upload, the brain is undoubtedly the spot. **Therefore (3)** if you could, in principle, copy or upload the human brain to an external source, you could copy the person’s essence. Not their body or skin, but their personality, memories, and core “self”. All of it is encoded in a complex web of neuronal connections, which **somehow (4)** comes together to create “you”, the conscious, self-aware being.

**QUESTION 7**

* Choose the terms that would be needed to logically fill in the blank **(1)**:

1. a range of
2. a rake of
3. a rate of
4. a rank of

**QUESTION 8**

* Choose the link word that would be needed to logically fill in the blank **(2)**:

1. as well as
2. as soon as
3. as far as
4. as much as

**QUESTION 9**

* Choose the terms that would be needed to logically fill in the blank **(3)**:

1. however
2. unless
3. although
4. therefore

**QUESTION 10**

* Choose the term that would be needed to logically fill in the first blank **(4)**:

1. somehow
2. something
3. somewhat
4. somewhere

**QUESTION 11**

* “***this is consistent with current scientific thinking***” means**:** *choose the correct proposal.*

1. As of yet there is little consensus about it among scientists.
2. There used to be no scientific evidence of it a little while ago.
3. It is not at variance with what most scientists concur in.

**QUESTION 12**

* “***so far so good***” means**:** *choose the correct proposal.*

1. The situation is in dire straits.
2. Matters are satisfactory up to the point.
3. Assumptions are a little far-fetched.
4. The situation is far from being ideal.

**PASSAGE à lire n°4**

Now, identifying the goal is the easy part. **The difficulty** ***(1)required (2)at (3)comes (4)doing (5)scale (6)this (7)the (8)with***. The primary challenge of mind uploading comes with capturing the brain’s incredible complexity. Every memory you can access, every **non-trivial** experience in your life that’s had an impression, all of the nuances of your personality, the impact of culture, etc. Each person is incredibly complex, **\_\_\_\_\_\_\_\_\_\_ (9)** measure.

**QUESTION 13**

* Reorder the second sentence of the paragraph so that it makes sense:

“***The difficulty***… comes with doing at the required scale“

**QUESTION 14**

* Only one of the terms below is not a synonym of “***non-trivial***”. Which one?

1. consequential
2. relevant
3. weighty
4. trifling
5. momentous

**QUESTION 15**

* Choose the term that would be needed to logically fill in the first blank **(9)**:

1. nearly beyond
2. utterly among
3. hardly along

**QUESTION 16**

* Decide whether the following assertion about this passage is TRUE or FALSE**.**
* *Being exhaustive in recording the content of our brain is by no means a hurdle.*

1. TRUE
2. FALSE

**PASSAGE à lire n°5**

In fact, the only thing **\_\_\_\_\_\_\_\_\_\_ (1)** this complexity is the brain itself. The computational power of the brain comes from \_\_\_\_\_\_\_\_**(2)**, and the human brain contains about 90 billion of them. Think about how many blades of grass are on a football field and then, double *that*. Then, consider the \_\_\_\_\_\_\_ **(3)**—the vast, interconnected links between **\_\_\_\_\_\_\_\_ (4)**, which allow the brain to communicate. The brain has over 100 trillion of these **\_\_\_\_\_\_\_\_\_ (5)**. Think about how many blades of grass there are on a football field, and multiply it by 1,000.

**QUESTION 17**

* Choose the term that would be needed to logically fill in the first blank **(1)**:

1. matching
2. dampening
3. harnessing

**QUESTION 18**

* Fill in the blanks in the paragraph using either ***NEURONS*** (A) or ***SYNAPSES*** (B) so that it makes sense:

1. = \_\_\_\_\_\_\_\_\_
2. = \_\_\_\_\_\_\_\_\_
3. = \_\_\_\_\_\_\_\_\_
4. = \_\_\_\_\_\_\_\_\_

**PASSAGE à lire n°6**

Your brain, your ‘self’, in all of its neuronal and synaptic complexity is called a *connectome*. Think genome, but for the brain. And this is what needs **[ copy ] (1)**. As Neuroscientist Michael Graziano remarks, “*...if we could measure all the neurons in someone’s brain, catalog which ones are connected to which, and characterize those synapses, we* **[ have ] (2)** *the essence of the person. The idea is that if scientists were able to map the human genome, an accomplishment once* **[ think + be ] (1)** *impossible, then they can tackle an even greater technical challenge and map the human connectome.”*

**QUESTION 19**

* Choose the correct from for “***copy*” (1)**:

1. copied
2. to be copying
3. to be copied
4. to have been copying

**QUESTION 20**

* Choose the correct from and tense for “***have***” **(2)**:

1. will have
2. had
3. have had
4. would have

**QUESTION 21**

* Choose the correct from and tense for “***think + be***” **(3)**:

1. thought to be
2. think of being
3. been thought
4. had been thinking

**QUESTION 22**

* Decide whether the following assertion about this passage is TRUE or FALSE**.**
* *Michael Graziano is confident that our connectome can be mapped.*

1. TRUE
2. FALSE

**PASSAGE à lire n°7**

So far so good, right? Easy peasy? Indeed, in January of 2020 the entire connectome of a fruit fly **[ *model* ] (1)** in exactly this way, in all of its synaptic connectivity. Science **\_\_\_\_\_\_\_\_\_\_\_\_ (2)**. Let’s look at how we can apply this to humans. The difficulty, of course, is that the human brain **\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (3)**. The connectome for the fruit fly took 12 years and cost over $40 million. It has about 25,000 neurons and 20 million synaptic connections. Recall that the human brain has over 90 million neurons, and over 100 trillion synaptic connections.

**QUESTION 23**

* Choose the correct from and tense for “***model***” **(1)**:

1. was modeled
2. was been model
3. would be modeled
4. has been modeled

**QUESTION 24**

* Choose the terms that would be needed to logically fill in the first blank **(2)**:

1. is heading beyond
2. is making headway
3. is way ahead
4. is headed away

**QUESTION 25**

* Choose the terms that would be needed to logically fill in the first blank **(3)**:

1. is far less complex
2. is much more complex
3. is nowhere as complex
4. is hardly as complex

**PASSAGE à lire n°8**

Capturing this level of detail sounds **forlorn**. This doesn’t make a human connectome impossible in principle, but it does add **\_\_\_\_\_\_\_\_ (1)** difficulty. MRI machines are technically **\_\_\_\_\_\_\_ (2)** for this very thing - taking a high resolution, 3D images of the brain. The 3D image created by MRI looks great **\_\_\_\_\_\_\_\_\_ (3)**. Still, when we drill down, it comes **\_\_\_\_\_\_\_\_\_\_ (4)** to capturing the complexity and detail of a **\_\_\_\_\_\_\_\_\_ (5)** connectome. Today’s highest resolution MRI machines can take a picture of about half of a cubic millimeter. To capture an individual synapse of neurons, we’d need a resolution two orders of **\_\_\_\_\_\_\_\_\_ (6)**  more sharp - a thousandth of a millimeter.

**QUESTION 26**

* “**forlorn**” means**:** *use the context to choose the correct definition.*

1. worthwhile.
2. hopeless.
3. auspicious.

**QUESTION 27**

* Complete the paragraph with the appropriate terms from the list below:

*a- nowhere close / b- designed / c- magnitude / d- significant / e- complete / f- at first glance*

1. = \_\_\_\_\_\_\_\_\_
2. = \_\_\_\_\_\_\_\_\_
3. = \_\_\_\_\_\_\_\_\_
4. = \_\_\_\_\_\_\_\_\_
5. = \_\_\_\_\_\_\_\_\_
6. = \_\_\_\_\_\_\_\_\_

**QUESTION 28**

* Decide whether the following assertion about this passage is TRUE or FALSE**.**
* *MRI machines actually don’t feature a suitable technology for capturing a human connectome.*

1. TRUE
2. FALSE

**PASSAGE à lire n°9**

But even if we could get that **\_\_\_\_\_ (1)** of resolution, we’d still be **\_\_\_\_\_\_ (2)** crucial elements of the brain. For example, certain synapses are more **\_\_\_\_\_\_\_ (3)** than others, and certain synapses communicate with different electro-chemicals. These may seem like small differences, but **\_\_\_\_\_\_\_ (4)** inaccuracies in recording these ‘nuances’ change the very \_\_\_\_\_\_\_**(5)** of the ‘person’. Capturing **these** would be crucial to maintaining an **\_\_\_\_\_\_ (6)** connectome, and would **\_\_\_\_\_\_\_ (7)** require entirely different technology.

**QUESTION 29**

* Choose the terms that would be needed to logically fill in the blanks:

|  |  |  |
| --- | --- | --- |
| 1. range 2. degree 3. omitting 4. faced 5. addressing 6. potent | 1. slight 2. sharp 3. modeled 4. fabric 5. upload 6. discrepancy | 1. accurate 2. upload 3. unmatched 4. likely 5. questionably 6. dubiously |

**QUESTION 30**

* Deduce from the context what word the demonstrative determiner “***these***” refers to:
* “ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ “

**PASSAGE à lire n°10**

Lastly, **\_\_\_\_\_\_\_ (1)** it’s understood that the lion’s share of the brain’s computation comes from neurons, other cells in the brain, such as *glia* also play important roles in supporting the brain. Most of this **\_\_\_\_\_\_\_\_\_\_\_\_ (2)** providing the brain’s physical integrity, but recent findings suggest they also impact processing **\_\_\_\_\_\_\_\_\_ (3)** the secretion of certain chemicals on neurons and synapses. Ignoring these additional ‘nuances’, and the whole connectome is fundamentally altered.

**QUESTION 31**

* Deduce from the context what the best proposal to fill in **(1)** is:

1. while
2. despite
3. whereas

**QUESTION 32**

* Deduce from the context what the best proposal to fill in **(2)** is:

1. has to do with
2. has a go at
3. has a say in

**QUESTION 33**

* Deduce from the context what the best proposal to fill in **(3)** is:

1. behind
2. through
3. among

**QUESTION 34**

* Decide whether the following assertion about this passage is TRUE or FALSE**.**
* *The computational power of the brain evenly relies on neurons and glia cells.*

1. TRUE
2. FALSE

**PASSAGE à lire n°11**

It’s worth noting that, not only are the technical hurdles immense but the margin for error is slim to none. Even if the connectome is 99.9%, that .01% can be massively influential - tilting essential aspects of your psychological experience in drastic ways. As Graziano points out, concussions - which cause minor swelling of the brain, can lead to dizziness, memory problems, and headaches which linger on for months. Considering every aspect of one’s psychological experience and moment to moment experience (pain, depression, terror, and all negative emotions very much included), it’s hard to know just how **excruciatingly** disruptive small differences could be.

**QUESTION 35**

* Choose the assertion**s** that properly render the meaning of the above passage:

1. A .01% error rate in copying the connectome can’t entail drastic alteration of your uploaded self.
2. Reaching 100% accuracy in copying a connectome is technically beyond the bounds of possibility.
3. The aftereffect of an injury can compromise an accurate copy of the connectome.
4. There’s no way to assess the extent of alterations due to minor error in the copying process.
5. Negative experience might cause more disruption than other types of events.
6. Anxiety can actually influence the very size of your brain.

**QUESTION 36**

* “**excruciatingly**” means**:** *use the context to choose the correct definition.*

1. In a way that is certainly true.
2. in a way that is extreme and difficult to bear.
3. In a way that is tends to alter reality.

**PASSAGE à lire n°12**

So, where does this leave us? Overall, we’ve got **\_\_\_\_\_\_\_\_\_\_\_ (1)**. The **\_\_\_\_\_\_ (2)** scale of the brain presents a potentially insurmountable hurdle in the brain copying process. **\_\_\_\_\_\_\_\_\_\_\_\_ (3)**, even if we were able to precisely copy a brain and upload, there is still the immense technical challenge of having the ‘person’ control an Avatar remotely via their own brain activity. Not to mention, the ethical **quagmire** of who to select for such an expensive, elaborate procedure. Simply granting everlasting life to the highest bidder would leave out many others who are potentially more deserving and who’s everlasting insights would be more beneficial to society as a whole. However, the digital afterlife remains an interesting area to monitor. In principle, it remains a technical possibility, even if it has a long way to go.

**QUESTION 37**

* Deduce from the context what the best proposal to fill in **(1)** is:

1. a ways to go
2. two ways of going
3. away enough to go
4. way further go

**QUESTION 38**

* Deduce from the context what the best proposal to fill in **(2)** is:

1. sheer
2. sheen
3. sheared
4. cheer

**QUESTION 39**

* Deduce from the context what the best proposal to fill in **(3)** is:

1. despite that
2. among that
3. unlike that
4. beyond that

**QUESTION 40**

* “**quagmire**” means**:** *use the context to choose the correct definition.*

1. a usually sudden perception of the essential nature or meaning of something.
2. exposure to or imminence of an unfair event.
3. a difficult, precarious, or entrapping position.

**QUESTION 41**

* Decide whether the following assertion about this passage is TRUE or FALSE**.**
* *The risk is that mind uploading might only be affordable for the better off.*

1. TRUE
2. FALSE