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# **Decipher the Secret, or Get Devoured by the Sphinx: Tackling the Question with the Aid of Science and Technology in the Provision of Tools and Answers**

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## **Introduction**

Falling asleep pondering the question of how the development in science and technology affected the difficulty in answering the question “what are we”, I had a very special dream. After I woke up, I formed the thesis of this essay. The thesis goes as the development in science and technology indeed eases the answering of the question “what are we” by ruling out wrong answers and leaving the right ones in the proliferation of available answers. That is to say, science and technology has aided the betterment in *truth searching tools* and the *provision of answers*.

Now I shall begin telling you about the happening of my dream...

## **A Fight between the Two Heads: Plato and Poincare on Searching Truth**

Once upon a time, in a very yellowy, sandy place, there sat a sphinx,

with two heads. He offered every passerby a riddle to answer<sup>1</sup>, if they failed, the sphinx would split the head of the person into two with its tail and each head devour one. They seldom argue, but things change on this day.<sup>2</sup>

Eric Kandel and James Watson, the neuroscientist and the molecular biologist (as I remembered), dressed in an exotic, archaic fashion, walked towards the land where the sphinx was guarding. As they were approaching the sphinx, the sight in front of them amused them, as they recognized that the heads of the sphinx were Plato and Henri Poincare<sup>3</sup>.

Upon the approach of the two, the sphinx smirked and said, “Decipher me or I’ll devour you.” He continued, “Some say we are souls, the others say we are physics and chemistry. Some say we are consciousness, and some other say we are biological machines. What are we?”

“Before you answer, here are the criteria we based on for judging whether you have provided the answer.” said the Poincare head. “The truth.” Plato head added. “*Recurrence*<sup>4,5</sup>, *simplicity*<sup>6</sup> and *similarity*<sup>7,8</sup> Over the years of scientific development, these are also critical elements helping scientists to select among all the facts. Things that recur are things that are general, which can be applied in different situations, for example,

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- 1 Based on the riddles of the sphinx, should originally be a “she” and with one head only.
  - 2 Because the heads have always just come up with riddles of absolute answers, this time, things are less absolute.
  - 3 I cannot be quite sure how they managed to, but it was a dream after all.
  - 4 or the predictive power if it is more easily understandable
  - 5 Original text: “This shows us how our selection should be made. The most interesting facts are those which can be used several times, those which have a chance of recurring. . .” (Poincare 160)
  - 6 Original text: “All that we can say is that we must prefer facts which appear simple, to those in which our rude vision detects dissimilar elements.” (161)
  - 7 Original text: “But what we must aim at is not so much to ascertain resemblances and difference, as to discover similarities hidden under apparent discrepancies.” (163)
  - 8 These points are stated by Poincare, however, in this dream where Plato head is one of the judges that make rules for the game, has already learnt all about it.

heredity, once you've learnt about it, you can use it to predict what quality your children may have which is inherited from you or what your long dead grandparents may have which you inherited from them. Simplicity, something that is too simple to show the differences between individuals, can be found in the extremely large, like the universe or small, like atoms.<sup>9</sup> Similarity, is what you are able to observe over and over again, and that you have to observe under discrepancies that usually helps you to discover the valuable facts underneath.<sup>10</sup>

Meanwhile, the Plato head went red and protested, "Truth is Forms. Forms are perfect.<sup>11</sup> Forms are in the Realm of Forms where the unchanged<sup>12</sup>, incorporeal, intangible, insensible ideas<sup>13</sup> rest. Although you may use your sense experience as a tool, recall your souls from remembering its prior memory of the Forms, but to reach the truth, you've got to reason without assisting by the sense experience." The Poincare head turned green. "As such, all your nonsense base on the observations of the material world is not..." The Plato head no longer existed in the material world then, the Poincare head bit it off and swallowed it. It was only the root of the neck, the blood dripping proving the once existence of the Plato head.

Poincare the sphinx said, "Listen, it is for the sake of you lot. In his

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9 Original text: "The physicist, on the other hand, has sought the elementary phenomenon in an imaginary division of bodies into infinitely small atoms, because the conditions of the problem, which undergo slow and continuous variations as we pass from one point of the body to another, may be regarded as constant within each of these little atoms." (162)

10 Original text: "But what we must aim at is not so much as to ascertain resemblances and differences, as to discover similarities hidden under apparent discrepancies. The individual rules appear at first discordant, but on looking closer we can generally detect a resemblance; though differing in matter, they approximate in form and in the order of their parts." (163)

11 Original text: "In short, there are two realms; a realm of forms or ideas, containing the perfect form of everything: and the material realm in which these forms or ideas are imperfectly replicated." (Lindberg 13)

12 Original text: "... and they are absolutely changeless" (13)

13 Original text: "The forms are incorporeal, intangible, and insensible . . ." (13)

standard, most people will not acquire the truth unless they, like Plato himself has been through the ‘rough, steep, upward path’,<sup>14</sup> and can rid themselves from the aid of their sense of experience while you provide your arguments. And he can reject your answers by his arbitrary definition of truth then.” The men shivered.

A man in an ancient Greek cloak adorned with olive twigs was walking towards them afar...

### The Sphinx was Hungry: Plato and Kandel on Consciousness

Kandel started by defining the question. “What are we... What makes us human beings? I think we should answer the question in two parts, as Descartes defined, the body and the mind<sup>15</sup>...” “Yes, and the mind, which derives from the spiritual nature of the soul.” Says the man, who was Plato, again. “How can you be resurrected? It’s scientifically impossible!” yelled Watson.

Plato continued, “Similarity, which shows itself when we find that different individuals are so different<sup>16</sup>, but through reasoning, we can all

14 Original text: “And if someone dragged him by force away from there, along the rough steep, upward path, and did not let him go until he had dragged him into the light of sun . . .” (Plato 7 [2004])

15 Original text: “In the seventeenth century, Rene Descartes developed the idea that human beings have a dual nature: they have a body, which is made up of material substance, and a mind . . .” (Kandel 182)

16 Original text: “But this we cannot believe—reason will not allow us—any more than we can believe the soul, in her truest nature, to be full of variety and difference and dissimilarity. [. . .]

Her immortality is demonstrated by the previous argument, and there are many other proofs; but to see her as she really is, not as we now behold her, marred by communion with the body and other miseries, you must contemplate her with the eye of reason, in her original purity; and then her beauty will be revealed, and justice and injustice and all the things which we have described will be manifested more clearly. Thus far, we have spoken the truth concerning her as she appears at present, but we must remember also that we have

find that we have similar souls, that are immortal, and contain the form of knowledge that we can recall that is of prior existence.<sup>17</sup>”

Kandel cleared his throat and started again, “If that’s all, let me proceed with my arguments, please. In the following, I shall answer the question with this, *our mind, or consciousness are from our physical brain*. The arguments I provide will fit the criteria of recurrence and similarity.

Let me first explain the term consciousness (ambiguous, not only strictly consciousness) a bit. It consists of unity and subjectivity. Unity being the way we perceive our experience as a whole<sup>18</sup>, and subjectivity being how we experience our own ideas, moods, and sensations directly but think of the other person’s indirectly<sup>19</sup>. I did an experiment that might shed light on the subjectivity in consciousness as an objective set of stimuli triggers different levels of emotional responses.<sup>20</sup> The experiment was purposed to help determine how visual perception becomes endowed with emotion. The experiment found that on showing a fearful face, in the conscious situation,

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seen her only in a condition which may be compared to that of the sea-god Glaucus, whose original image can hardly be discerned because his natural members are broken off and crushed and damaged by the waves in all sorts of ways, and incrustations have grown over them of seaweed and shells and stones, so that he is more like some monster than he is to his own natural form. And the soul which we behold is in a similar condition, disfigured by ten thousand ills. But not there, Glaucon, not there must we look.” (Plato bk. 10 [2008])

17 Original text: “. . . sense experience may actually stir the memory and remind the soul of forms that it knew in a prior existence, thus stimulating a process of recollection that will lead to actual knowledge of the forms.” (Lindberg 14)

18 Original text: “The unitary nature of consciousness refers to the fact that our experiences come to us as a unified whole.” (Kandel 183)

19 Original text: “We experience our own ideas, moods, and sensations directly, whereas we can only appreciate another person’s experience indirectly, by observing or hearing about it.” (Kandel 183)

20 As Benjamin Libet proposed that “the process of initiating a voluntary action occurs in an unconscious part of the brain, but that just before the action is initiated, consciousness is recruited to approve or veto the action.” (Kandel 192) The variation in the results of the unconsciousness (namely the different responses due to different background anxieties) obviously affect the results of the overall consciousness.

all participants' fight-or-flight response was activated regardless, but in the unconscious situation, the people with higher background anxiety had greater response.<sup>21</sup> The similarity can be seen in the conscious response, that people of different background anxiety similarly showed fight-or-flight response. The recurrence can be seen in the prediction power of the result, that we only need to know the person's background anxiety to tell how much response will be triggered upon the exposure of the person to a fearful situation. It is with the *development in the science* that I have inherited the knowledge regarding the seven universal facial expressions<sup>22</sup> and Freud's idea of consciousness and unconsciousness<sup>23</sup>, and making me able to design the experiment. The development and the producing in *technology* like MRI<sup>24</sup>, allows me to detect the activity of amygdala."

"Yes, Kandel, you have shown clearly that your answer fits into the criteria of recurrence and similarity very well. However, Plato, your answer can hardly convince me. You argued (in *The Republic* bk. 10) that the soul is one immortal thing that exists in every individual by 'proving' that evil cannot lead to the death of the soul as sickness can lead to that of the

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21 Original text: "Activation of the basolateral nucleus by unconscious perception of fearful faces occurred in direct proportion to a person's background anxiety . . . . Conscious perception of fearful faces, in contrast, activated the dorsal region of the amygdala, which contains the central nucleus, and it did so regardless of a person's background anxiety." (Kandel 190)

22 Original text: "Ekman, who has catalogued more than 100,000 human expressions, was able to show, as did Charles Darwin before him, that irrespective of sex or culture, conscious perceptions of seven facial expression—happiness, fear, disgust, contempt, anger, surprise, and sadness—have virtually the same meaning to everyone. (189)

23 Original text: ". . . the discovery of a correlation between volunteers' background anxiety and their unconscious neural processes validates biologically the Freudian idea that unconscious mental processes are part of the brain's system of information processing." (Kandel 191)

24 MRI was used by Eric Lumer and his colleagues to measure the activity of the frontal and parietal areas of the cortex as the regions when the image shown in front of a person change from one into another. (Kandel 188)

body.<sup>25</sup> However, I can argue in such a sense that body has been proven to be consisted of even smaller units like cells or even atoms thus the soul must be consisted of smaller units. If so, what you proposed was not simple at all and neither can it recur, let alone the logical problems in the way you argue!”

Then, Plato got eaten again.

### **An Alternative Answer for the Question: Watson on Body**

“Now I would like to present my answer.” Watson said, trembling. “Body, we all have different bodies. And my argument is that *our bodies are featured by these DNA molecules*. DNA is the genetic material that<sup>26</sup> show how you inherited many features from your ancestors.”

“The simplicity is shown in the extreme smallness, of a DNA molecule, that exist in all organisms although the sequences in the bases might be

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25 Original text: “Consider, I said, Glaucon, that even the badness of food, whether staleness, decomposition, or any other bad quality, when confined to the actual food, is not supposed to destroy the body; although, if the badness of food communicates corruption to the body, then we should say that the body has been destroyed by a corruption of itself, which is disease, brought on by this; but that the body, being one thing, can be destroyed by the badness of food, which is another, and which does not engender any natural infection—this we shall absolutely deny?

Very true.

[. . .]

And, on the same principle, unless some bodily evil can produce an evil of the soul, we must not suppose that the soul, which is one thing, can be dissolved by any merely external evil which belongs to another?

Yes, he said, there is reason in that.

[. . .]

But the soul which cannot be destroyed by an evil, whether inherent or external, must exist for ever, and if existing for ever, must be immortal?

Certainly.” (Plato bk. 10 [2008])

26 Original text: “If you knew the sequence—the order of bases—along one chain, you automatically knew the sequence along the other. It was immediately apparent that this must be how the genetic messages of genes are copied so exactly when chromosomes duplicate prior to cell division.” (Watson 131)

different but the structures and formation are alike, the rule is applicable for all organisms and species. And it was with the scientific knowledge about the arrangement of amino acids in proteins, from Linus Pauling<sup>27</sup>, and technology development like Rosalind Franklin's x-ray diffraction technique that we got to discover the structure, and everything about DNA."

"Anything that simple, that elegant, just has to be right!"<sup>28</sup>

The sphinx Poincare licked his lip and said, "You two have separately provided some very good answers, one fitting the criteria of recurrence and similarity, the other simplicity. In another word, you respectively, have failed to decipher me, and..."

### **One More Riddle to Solve: Showcasing Harmony (Unity)**

"Wait!" Both shouted, "You didn't say we couldn't merge our answers together to provide one answer. You asked us one question after all."

"We are constituted of the body and the mind, but they are nothing separate. DNA and consciousness. The DNA affects many things, including personality, your emotions, your ways of thinking and these are part of the consciousness. And your consciousness can affect your DNA, in such ways as common as when you're sad and impulsively binge eating junk food which can be carcinogenic and mutate your DNA!<sup>29</sup>" Kandel said. "Body

27 Original text: "... Caltech's Linus Pauling, announced a major triumph: he had found the exact arrangement in which chains of amino acids (called *polypeptides*) fold up in proteins, and called his structure the  $\alpha$ -helix ... ." (Watson 123)

28 Original text: "Anything that simple, that elegant just had to be right." (131)

29 "Acrylamides, cancer-causing agents recently found in some fried and baked foods, can damage the DNA by causing a spectrum of mutations, researchers have reported. Swedish scientists triggered a furore in 2000 when they reported that acrylamides, used in industrial processes, can be found in a range of baked and fried foods." (Agence France-Presse)



and mind are inseparable!” Watson shouted.

“Very well. You guys have even shown the quality of *harmony*<sup>30</sup> in truth. You’re free to go.” Poincare said.

## Conclusion

This essay’s thesis is that the development in science and technology makes it easier to answer the question “what are we” by bettering the *truth searching tools* and multiplying the *provisions of answers*. The fight between Poincare and Plato has shown the competition between the truth searching tools emerged from different eras, and the one developed from science is kept as the better one. Then the *tool* including the criteria of *recurrence*, *similarity* and *simplicity* (and *harmony*) were used to select different answers for “what are we” among Plato, Kandel and Watson.

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30 “Harmony” as in... “What I mean is that more intimate beauty which comes from the harmonious order of its parts, and which a pure intelligence can grasp.” Following “The Scientist does not study nature because it is useful to do so. He studies it because he takes pleasure in it, and he takes pleasure in it because it is beautiful.” (Poincare 163)

Meaning that the different true facts have to be connected and showing a harmonious order which in this case is the unity of the mind and the body.

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**Teacher’s comment:**

The writer turns this obviously argumentative topic for an academic essay into a highly creative, imaginative and fascinating story complete with solid, well-supported arguments that are no less intellectual than what one might expect in an academic essay. The writer uses the story of “the riddle of the Sphinx” as her blueprint, bringing Plato, Henri Poincare, James Watson and Eric Kandel into the story and unfolds her arguments in the form of a conversation between the four characters—and not without amazing twists and turns in the plot. Striking an excellent balance between creativity and academic rigor, this essay is both convincing and fun to read at the same time. (SZETO Wai Man)

