



# 5D Thinking:

## *The Human Tongue*

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*Our five senses are designed to provide us with many experiences in this world. However, we need to learn how to interpret these experiences correctly. Otherwise, our perception of truth and reality may be corrupted.*

*In this chapter, we will learn about the experience of taste and see if we can interpret this worldly experience correctly. We will study the structure of our tongue and understand its many roles that include tasting, swallowing and speaking. But before we begin, let us consider the following question:*

***Do we experience the sense of taste with our tongue, or is there more to the story?***

### ◆ **First Dimension: Analytical Thinking**

#### *Scientific Understanding of the Human Tongue*

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**Y**our tongue is a muscle. In fact, it is made of lots small muscles; each of which runs in a different direction. The tongue is also the strongest and most sensitive muscle in the human body. It has three main functions: eating, tasting and speaking.

**Eating:** When you swallow, your tongue makes it easier for your food to move to the back of your throat. In fact, the muscles at the back of the tongue push the food and saliva into the oesophagus, the tube that goes from the throat to the stomach. It also works like a toothbrush helping you to clean the food stuck between your teeth.

**Tasting:** Have you ever noticed the bumpy surface of your tongue? The bumps on the surface of your tongue are called papillae. Each of these papillae contains taste buds. You have lots

of tiny taste buds inside the papillae; thousands of them. Each taste bud contains banana-like clusters of taste receptor cells. The taste receptor cells are bundled in such a way that their tips form a taste pore at the surface of the tongue. Out of each taste pore extends tiny hairs called microvilli. The microvilli send messages about the food that you eat via the cranial nerves to your brain where the signals are processed, and each taste is identified. What you perceive as taste is the outcome of electrical signals sent to your brain.

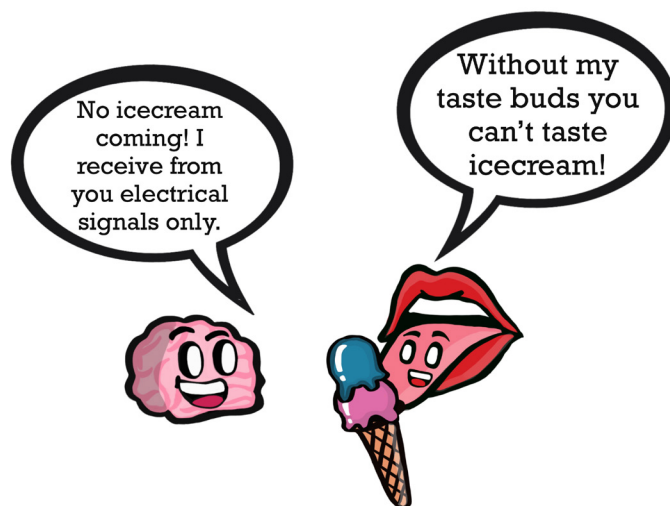
### You Taste with Your Brain, not with Your Tongue

The moment you take a bite of delicious food, your mouth is filled with flavour. You feel a pleasant sensation on your tongue. In reality, you do not taste with your tongue. You taste with your brain. Indeed, it is in the brain that the different flavours we taste are experienced. The process of tasting involves smelling as well. That is why when you have a cold for instance, and you can't smell well, food doesn't feel so tasty. Your tongue and brain are designed to help you identify five primary tastes which are sweet, sour, salty, bitter and umami (a pleasant, savoury flavours). "Spicy" is not considered a taste despite common belief. In fact, it is just a pain signal sent by the nerves that transmit touch and temperature sensations.

**Speaking:** We use our tongue to produce sound. Indeed, most of the sounds we make when we speak are shaped by our tongue. There are some sounds that can only be made when your tongue is pressed onto the back of your front teeth (like th- or t-), and others that are made when your tongue is pressed at the back of your throat (like g-).

### Amazing Scientific Facts about Human Nose:

- Your tongue is one of the most active muscles working tirelessly in your body. It is constantly pushing saliva down your throat even when you are sleeping.
- If you placed a slice of lemon on your dry tongue, you would not be able to say it was sour. You need saliva to dissolve food molecules before tasting.
- The color of your tongue can tell a lot about your health: a pink tongue means good health while a white tongue means fungal infection, and a yellow tongue means fever.
- Did you know that, like your fingerprint, your tongue is unique? Yes, indeed, the uniqueness is due to the different number of taste buds we each have.
- Did you know that a single saliva drop has 1 million bacteria? Do not be afraid. They are there to help you to digest, not harm you.

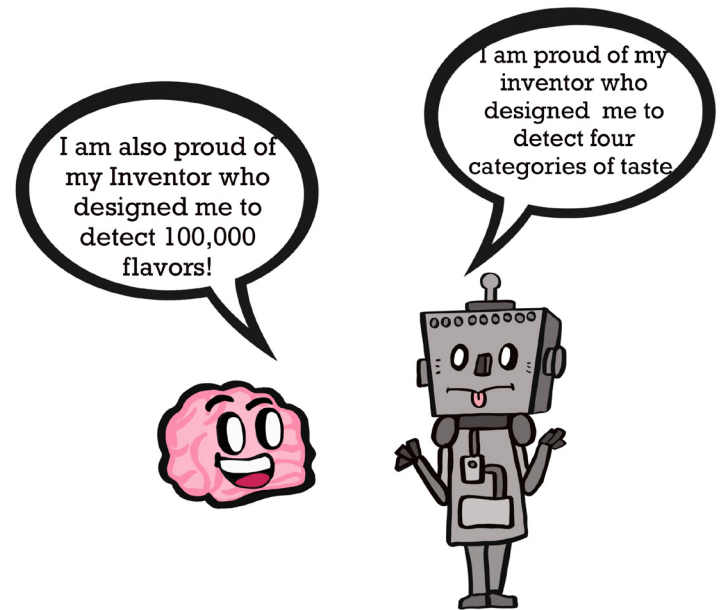


## ◆ Second Dimension: Analogical Thinking

### *Human Tongue vs. Electronic Tongue*

Let us compare our tongue to a taste simulator, also called the 'electronic tongue'. After many years of research, scientists at the National University of Singapore developed a device that uses electrodes to stimulate the tongue's taste buds. The device allows users to electronically experience specific salt, bitter, sweet and sour tastes. The scientists named their device the Digital Flavor Synthesizer.

In comparison to our tongue, a DFS is extremely primitive. While our taste buds can detect the tastes of different foods based on their chemical components, the DFS relies on an electric current with a specific frequency that mimics the taste of a particular food. The device gives the sensation that the tongue is tasting something sweet, sour, bitter or salty. However, a DFS cannot tell anything about what is being tasted. It can only capture basic taste categories.



When we study the tongue, containing about 8000 taste receptor cells with the ability to harmoniously detect the five primary tastes resulting in virtually infinite flavour combinations, we realise that the DFS is simply not comparable. It is important to note that the DFS is just a stimulator that sends electrical signals to the already existing taste circuitry in the brain. Scientists are still far from fully understanding how the taste circuitry within the brain actually works. It took thousands of years of accumulated knowledge and experience to come up with an artificial tongue (that is still a far cry from the human tongue).





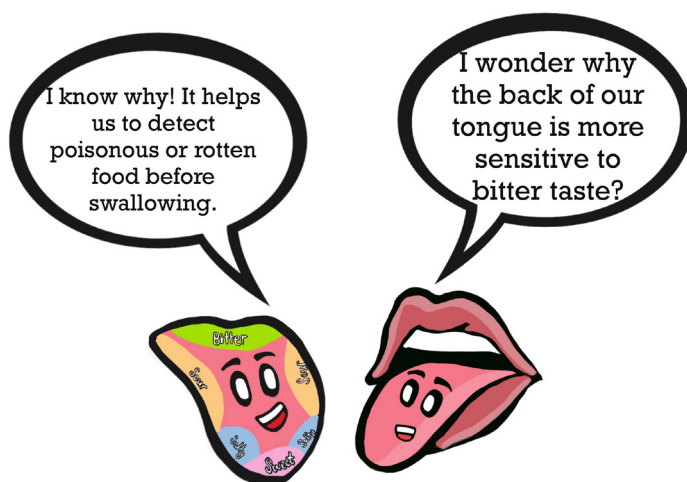
## ◆ Third Dimension: Critical Thinking

### Exploring the Maker of the Human Tongue

**H**ow is an electronic tongue made? Like other electronic devices, it is made of raw materials such as metals, magnets and copper wire. Do you think these materials could randomly come together and form an electronic tongue out of thin air? Without any external intervention?

The raw materials of an electronic tongue first need to form the basic components of an electronic circuit that include resistors, transistors and inductors. Then, these components need to come together in a specific way (according to a purposeful blueprint) to form an electronic tongue. Since the raw materials and their ingredients (such as atoms and molecules) have neither knowledge nor consciousness, they could not possibly come together on their own to form such a complex device.

In comparison, consider the structure and function of your tongue. As we discussed in the previous dimension, your tongue is a thousand times more complex and benefi-



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**Imagine if you were born without the sensation of taste and the ability to speak?**

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cial than the electronic tongue. Imagine if you were born without the sensation of taste and the ability to speak? Think about how this would affect the quality of your life.

But how did we get such a useful tool? Can it be the work of specialized cells? Where did those cells get their education and training to do work that our human experts (scientists) could not get at top medical schools? As it does not make sense to think that the electronic tongue is the product of its components, it is also not reasonable to think that the human tongue is the work of its cells. If we study the molecules of living cells, we will find out they are just made of atoms consisting of electrons and a nucleus with small subatomic particles. It does not make sense to think that we get the sense of taste from cells, molecules, or atoms. In short, we have seen how the existence of an electronic tongue is the product of inventor(s) who possess will, knowledge, and power. In the same way, if we engage in deep critical thinking, we should understand the existence of the tongue and its taste circuitry also require a Maker with will, knowledge and power.

## ◆ Fourth Dimension: Meditative Thinking

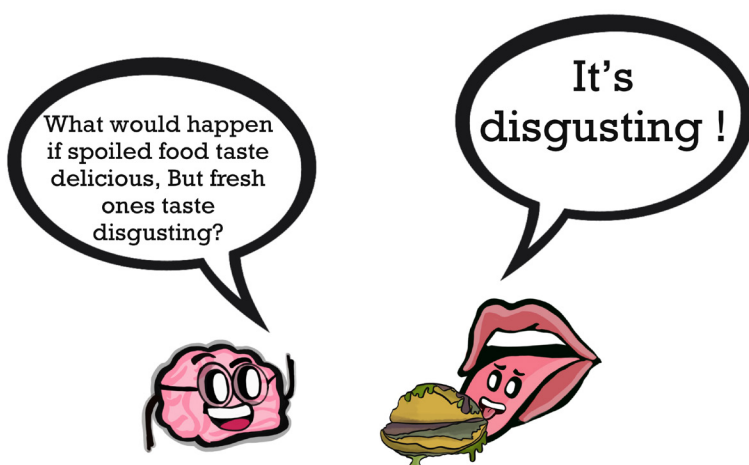
### *Reflecting on the Attributes of the Maker*

It is important to remember that the sense of taste depends on the interaction between many different components within the body and outside of it too. It depends on the saliva produced by the salivary glands. It also depends on the taste receptors on the tongue and on the neurons in the brain. It depends on the sense of smell. It also depends on the chemicals in the food that grow independently of the body.

The sense of taste is connected to stimulators in food. Indeed, we experience taste only if the food has the right stimulators. Otherwise, our tongue and the whole complex taste circuitry would be useless. Each taste is connected to certain food ingredients. For instance, the perception of a “sweet” taste is ignited by sugars. “Sour” is triggered by the hydrogen ions in acetic acid and citric acid. “Bitter” is linked to chemicals such as quinine and caffeine, which are detected through magnesium chloride. “Salty” is related to sodium chloride. Finally,

“Umami” is ignited by Monosodium Glutamate (MSG). Thus, the Maker of the taste sensory system must be the Maker of all those ingredients. He must be the One who places these ingredients into the right type of food, providing us with vital nutrition as well as pleasant taste sensations. Imagine what would happen if fresh food tasted rotten while spoiled food tasted delicious. Placing the right taste into the right food is a clear sign of wisdom and care working within the integrated system of taste granted to us.

If we further reflect using scientific knowledge, we will realize that it is impossible to have a sense of taste without the entire universe since the sense of taste required that we’re alive- breathing clean air, drinking water, and eating food. This means that we need air, water, earth, sunlight, and the entire universe to experience taste. Indeed, it is evident that there must be a Maker, a source of this consciousness and interconnectedness between living beings and non-living matter. It is evident that the Maker of our tongue has to be the Maker of our bodies. Also, the Maker of our bodies can only be the Maker of the world around us, and the Maker of the entire universe. In short, the way your tongue is made speaks about its Maker and reveals His beautiful qualities such as the **All-Loving, All-Compassionate, All-Generous, All-Knowing, All-Powerful, All-Wise, Most-Merciful and Most-Kind.**



## ◆ Fifth Dimension: Moral Thinking

### *Responding with Better Character*

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**W**e are often unaware of the importance of our tongue. And in our state of unawareness, we may assume that we can live without such a complex organ. True, the tongue is not as vital as our heart or lungs. However, it is easy to imagine how difficult life would be without a tongue. It does not only help us taste food but also helps to talk, swallow, spit and clean our mouth. Science is just beginning to understand the complexity of observed tasks that are by the tongue.

Our Maker created our tongue with absolute perfection and connected it to everything in our environment. Consider how your tongue is designed to connect you to other beings. When you speak and make comprehensible sounds, you can communicate with others and connect with them on a mental, psychological and emotional level.

The Maker of the tongue does not need payment. In fact, everything in the universe belongs to Him. He grants everything out of His kindness and compassion. In return, we should offer our gratitude to Him through good words and actions. We should be aware that the One who grants us such an amazing tongue knows what we choose to eat, speak and taste with it.

Just as our Maker nourishes our bodies with nutritious food, He also provides food for our minds, hearts, and spirits. The delicious tastes and the pleasure they incite within us speak to the heart. Indeed, the meanings, wisdom, kindness, generosity, love, and mercy related to the activities involved in our eating, tasting, and enjoying our food relate to the spirit. This is how our Maker teaches us about Himself and about the purpose of our life on Earth.

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**Remembrance** is to be mindful of the Creator of the tongue. It is to keep in mind that this amazing tongue is a gift from Him and therefore our gratitude is due to Him.

2

**Reflection** is contemplating how the tongue is a priceless and miraculous gift of our Creator's mercy.

3

**Gratitude** is being thankful to the Creator for giving us such a precious and amazing tongue that is capable of taste, eating and speaking.