

APD Week 2 ——Flow Backwards

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Theme : Play and Time

There are many rules in nature that generally seem to be irresistible, for example, time cannot be turned back and things that have been used can never be restored to their former state, really?

The truth is that everything is triggered by conditions. When all the conditions are suitable for the occurrence of the "impossible" will become possible.

For example, with the advancement of technology, human lives have been saved from the brink of death time and time again by the development of drugs.

This week's prescribed theme is Play and Time.

I think there is nothing more exciting than studying whether time can be turned back. The fields of science and art are both fascinating and aspirational. Because so many works on time travel have appeared in the history of art. This week I will examine whether time travel backwards is possible from both an artistic and a scientific perspective.

Context:

Humans have been pursuing time and space since a long time ago.

Human ancestors seem to divide the development of going back in time into several steps. The first is to freeze time. In 1839, Frenchman Daguerre produced the first silver camera in the history of the world, and it could take clear images. Now humans are in the second step, the use of technology to allow people to experience the full range of frozen time (VR technology). Relying on the development of VR technology, human beings can restore the environment in the photo and then let people experience the time in the photo through VR equipment. Obviously, this is a combination of technology and art, so humans are closer to the time back. But the fact is that this is virtual, not real time travel. So is it possible to really go back in time? Before answering this question, we need to understand what is time? Is there a more tangible representation of it? Do the time passages in Doraemon really exist physically? According to Chris Smeenk and Christian Wuthrich in Time travel and time machines, there is no paradox that excludes time travel, either based on logic or metaphysics. More relevantly, modern theories of space-time such as general relativity seem to allow models characterized by closed world lines.

Method:

Since time is not tangible, this experiment will adopt an analogical approach by selecting an object with similar properties to time and then reasoning by analogy. After thinking, I decided to choose water as the experimental material, because water is considered to be the same as time, and according to the description of the time tunnel in the artwork, water seems to be more like a river. Before the experiment, I need to explain a little scientific fact about the "Marangoni effect": the phenomenon of mass movement due to the gradient of tension between the interfaces of two liquids with different surface tensions. The reason for the Marangoni effect is that the liquid with high surface tension has a strong pull on the liquid with low surface tension around it, resulting in a surface tension gradient; the liquid flows from the direction of low surface tension to high tension. Therefore, the following experiment was designed:

First, I need to prepare two empty cups A,B.

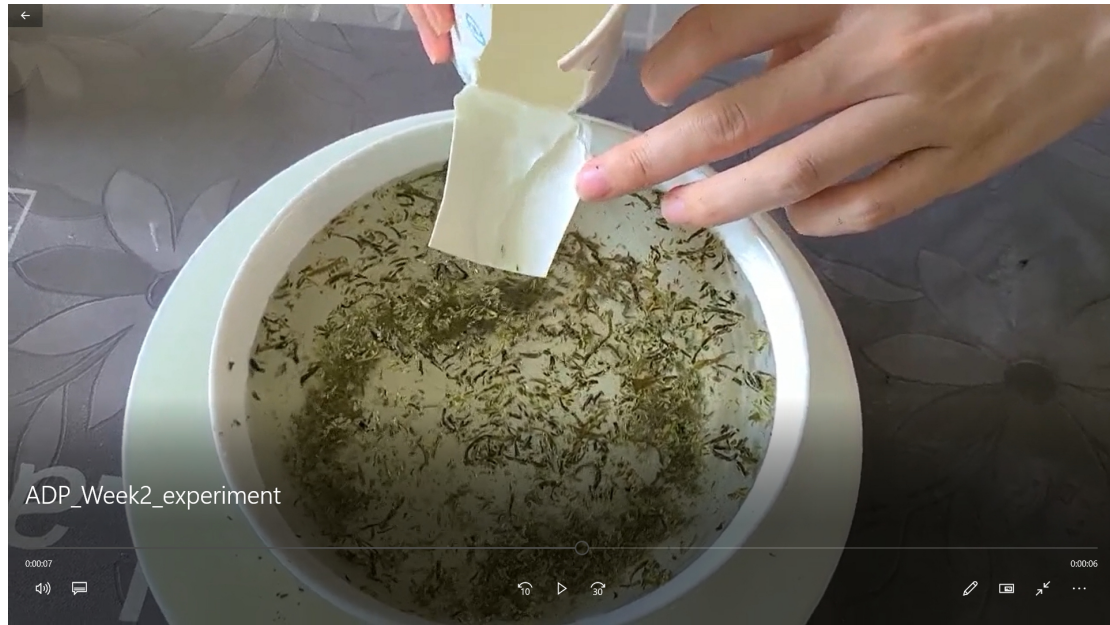
Fill AB with water

Then put finely chopped tea leaves into cup A

Pour the water from B into A

Observe the recorded phenomenon will find: the water backflow (the reason is that the original did not add finely crushed tea leaves in B appeared finely crushed tea leaves)

VIDEO LINK: <https://youtu.be/6QIYRIqrsP0>



Reflection:

1. Since time is not tangible, we can only use the method of simulated substitution, so I chose water as the substitute according to the vision of the time tunnel in the art work. However, the scientific basis for this conjecture is not strong.

2. Due to the limitation of experimental equipment, it is impossible to complete the mainstream scientific theory of time travel, that is, time slows down when the speed of the object is close to the speed of light. When the speed of the object exceeds the speed of light, time can happen backwards (Einstein's theory)

3. According to 1 2 points, and combined with the scientific theory of the "Marangoni effect" to carry out experiments, it was observed that the phenomenon of water flowing backwards did occur. Therefore, my conjecture is that it is not impossible to reverse the flow of time, but it needs to happen under certain conditions. (Everything follows the conservation of energy, but there are losses in the non-ideal state. Therefore it may happen that e is not a constant value.) According to $E=1/2 M V^2$ I think such a bar is that time reversal occurs when E_2 in the survival dimension is greater than E_1 in the spacetime dimension.

4. Unfortunately, there is no way to verify my conjecture on the most scientific basis, but I am looking forward to verifying it one day as technology advances.