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# Humans May Have an Imperfect Physical Engine

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## Abstract

Many studies have shown that babies already have certain physical beliefs about the physical world. When shown some counter-intuitive scenes, like a ball keeping still with no support, they will be surprised. However, it remains to be discussed whether the commonsense is born with them or developed by learning from experience. In this article, we will present the opinions for and against inborn physical engine and explain why we think that humans may have an physical engine, though imperfect.

## 1 Introduction

Intuitive physics refers to the knowledge underlying the human ability to understand the physical environment and interact with objects and substances that undergo dynamic state changes, making at least approximate predictions about how observed events will unfold[1]. The physical engine does reasoning and predicting completely based on known intuitive physics. Therefore, when discussing whether there is an inborn physical engine, we are essentially discussing whether humans are born with intuitive physics. In the past decades, humans have designed various experiments to test whether humans have a physical engine. Some experiments show support for a physical engine, like predicting the ball released in the air will fall instead of remaining still. But some experiments do not support the idea directly. For example, humans tend to predict that an apple dropped from a moving train will remain still in the horizontal direction[2]. A controversy about the existence of physical engine begins from the contradictory experiments' results.

## 2 Reasons for non-existent physical engine

Some people argue that physical engine does not exist. The reasons why babies show a certain extent of physical awareness are that babies learn from real life experience. Humans could correctly predict the moving direction of a released ball in the air because they observed similar things happening in there lives.

## 3 Reasons for physical engine's existence

We think that physical engine exists. The main experimental evidence is that studies show that for babies as young as two weeks old, they already have an intuition of physics.

Besides, those intuitive physics tests where humans often fail are not sufficient to illustrate the absence of a physical engine. Instead, assuming that there exists physical engines, these experiments could only prove that the physical engines are imperfect. In Kubricht et al. [1], they show that the physical engine may be just an Aristotelian model of physics, which is partially correct.

## 4 Conclusion

In this article, we argue that humans may be born with an imperfect physical engine, which explain both successful and failed experiments well. Still, we do not mean that it is impossible that the physical engine do not exist at all. Our conclusion is just based on that existence of physical engines better explains the experimental results and our life experience.

## References

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- [2] Michael McCloskey, Allyson Washburn, and Linda Felch. Intuitive physics: the straight-down belief and its origin. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9(4):636, 1983. 1