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Digital-Kakejiku Typhoon Model based on Fluid Mechanics

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Abstract

In this paper, Digital-Kakejiku typhoon model is constructed based on fluid mechanics. The system of counter clockwise (clockwise) vortex-source, one picture and clockwise(counter clockwise) vortex-sink is the present model.

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1. Introduction

Digital-Kakejiku (referred to D-K, hereafter) is a series of artistic light pictures consisting of over one million scenes, changing its image at one minute interval. These pictures may be projected on the walls of buildings or natural backgrounds by using powerful projectors. Each the image is a random mixture of original pictures drawn by the junior author, so that fantastic images sequentially appears with time but D-K has neither “start” point nor “end” point. This is because D-K contributes to get rid of time constraint from people. D-K entrusts observer’s perception as well as cognition, and so any concrete appeal of messages by the sender is removed. This naturally provides us a comfortable “pause”. In D-K, message, if any, may appear in each of the observer’s mind. This must result in that each of us acquire different message from a common picture of D-K. It can be said that D-K is a kind of natural movies such as running water in the river, breaking waves approaching to the seashore or glorious scenes in the sunset. D-K is, therefore, a novel and revolutionary art with a permanent value.

2. Modeling

Let us design the Digital-Kakejiku model in terms of the vortex and source (or sink); Fig.1 illustrates such a model, in which at $\tau=0$ the information is generated by the counter clockwise vortex-source.
\[ \phi = \left[ \Gamma \cdot \arctan(y/x) - m \cdot \log r \right] / 2\pi, \quad (1) \]

while at \( \tau = 1 \) it is absorbed by the clockwise vortex-sink,

\[ \phi = - \left[ \Gamma \cdot \arctan(y/x) - m \cdot \log r \right] / 2\pi. \quad (2) \]

It may be evident why this model describe the D-K; The co-ordinate \( \tau \) is the normalized time, in which each the picture is generated and absorbed at \( \tau = 0 \) and 1 respectively. It consists of a combination of pictures drawn by the junior author, so this process is modeled by the clockwise vortex-source of (1). Thus, only a single picture is observed during \( \tau = 0 \) and 1, at which the picture is absorbed by the clockwise vortex-sink of (2) and is then replaced by a new one. The three processes, viz. (a) birth, (b) living, (c) death and (d) rebirth of the picture are essential component of this model, so these continue cyclically as far as the driving electric energy is supplied.

![Digital-Kakejiku right-handed vortex model, or ‘Typhoon model’](image)

### 3. Conclusion

A Digital-Kakejiku model, called ‘Typhoon model’ based on fluid mechanics has been proposed[1]. This model is the system of counter clockwise (clockwise) vortex-source, one picture and clockwise(counter clockwise) vortex-sink.

Digital-Kakejiku is a game, but it is almost impossible for us to recognize the fact each of us playing the game while seeing the picture. Each the picture in Digital-Kakejiku appears as cyclic motion of birth, living, death and re-birth, though some picture may vanish away directly.

### 4. References