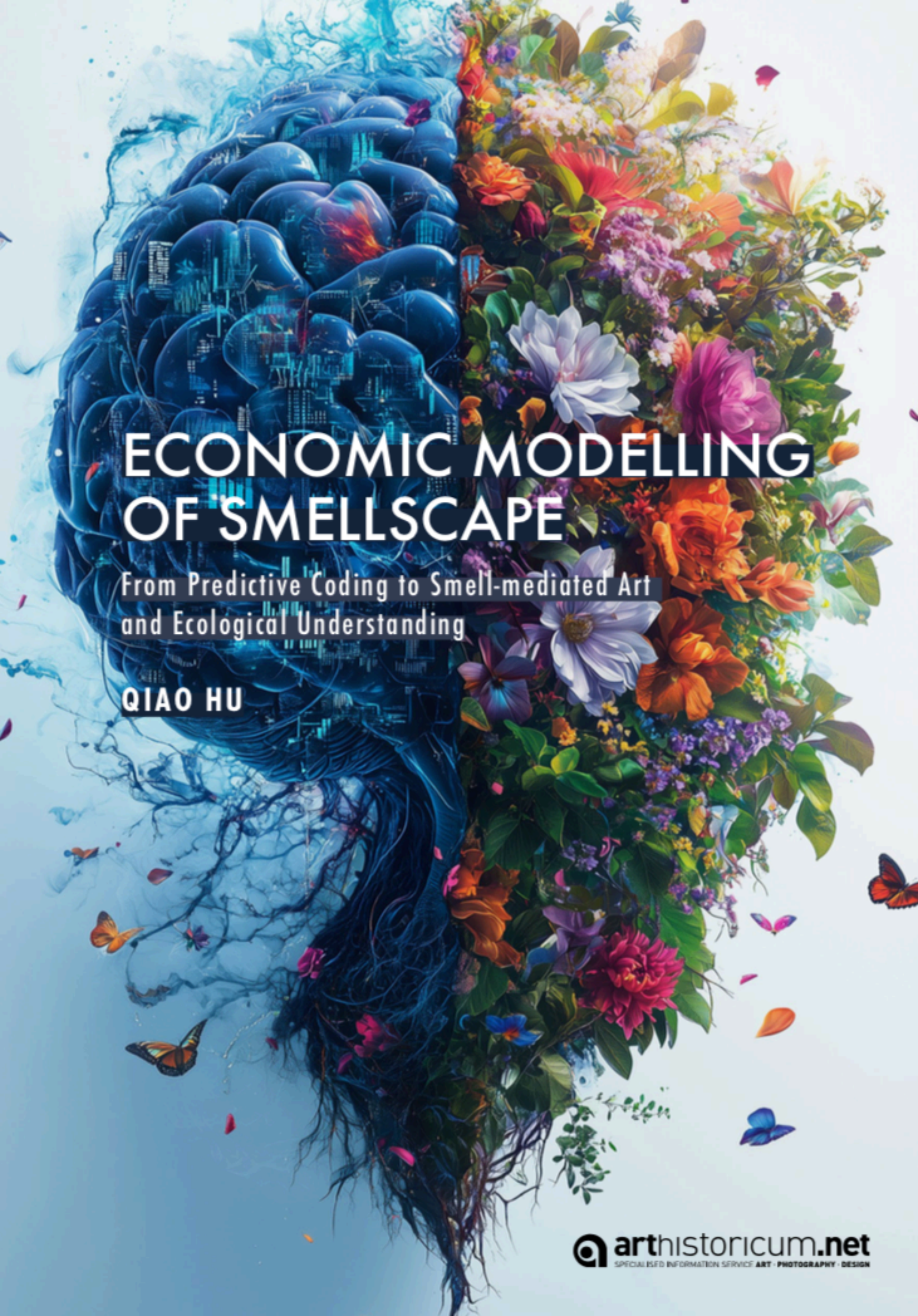

ECONOMIC MODELLING OF SMELLSCAPE

From Predictive Coding to Smell-mediated Art and Ecological Understanding

QIAO HU

Figure 5.1 Patrick Palcic, *Scent Clock*, Berlin, 2021. Photo by Janet Voß and Henrik Kam.

5.1 Increasing Entropy: Incense Clocks in East Asia

Time can be smelled.

Artist Patrick Palcic has created the *Scent Clock* (Figure 5.1), a piece that transforms the time of day into changes in scents that can be smelled. The *Scent Clock* consists of a metal shelf that can be mounted on the wall, equipped with 12 holes for inserting glass test tubes containing different perfume fragrances. An hourly scent is released from one of the test tubes through a device located at the port of each tube, with the scent changing every hour. Palcic believes that the fast-paced life of modern society makes it difficult for people to establish the concept of time without relying on numbers. Through his work, people can gain a new perspective on time change. Moreover, time is no longer an abstract concept or a number to be read. Instead, it is a substance that exists in the air and can be inhaled.

In China and Japan, scent has a very direct correlation with time, where incense itself is regarded as a timekeeper.[6] In the true sense of the word, scent clocks have existed and been used for at least 1000 years. It is common for people to measure time by observing the traces of burning incense and perceive time by inhaling the scents in the air. This idea and application of timekeeping are consistent with the theory of entropy in the previously mentioned thermodynamic arrow of time—burning incense creates entropy. The increase in entropy records the passage of time. Burning incense for timekeeping is an application of Hawking's first arrow of time and exemplifies temporality at the physics level.

Although ancient Chinese water clocks and sundials provided more accurate timekeeping, incense clocks remained popular because it was unaffected by the environment and was easier to operate (e.g., sundials were difficult to use on cloudy and rainy days; water

6 Silvio A. Bedini discusses this issue in his book and articles. Chapter 5.1 references his works. See Silvio A. Bedini and P.S.A. Bedini, *The Trail of Time: Time Measurement with Incense in East Asia*, Needham Research Institute Studies (Cambridge University Press, 1994).

This book explores the cognitive processes underlying olfactory experiences and smell-mediated artworks through an interdisciplinary approach, integrating perspectives from art history, neuroscience, economics, mathematics, and physics. The study develops economic frameworks for quantifying smell-related risks and benefits while investigating how prior knowledge and temporal factors shape our olfactory perceptions. Through analysis of contemporary smell-related art practices, it examines how artists use scents to address ecological crises, cultural memory, and social dynamics. The research also investigates time's role in olfactory experiences, revealing how smells connect past, present, and future through individual and collective memories. By integrating scientific methodologies with artistic inquiry, this work provides new perspectives on olfaction's significance in human perception and its potential for addressing environmental and social challenges.