Love

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1 Introduction

Love is a complex emotion, often characterized by behaviors that can be difficult to understand. We want to more deeply understand love by modeling on the mathematical.

2 Modeling

2.1 Basic Definitions

Definition 1. *Love is a relationship between two people, denoted as a and b, where $a, b \in P$. We define the love between a and b as:*

$$L(a,b) = \{(a,b) \mid a,b \in P \text{ and } L(a,b) \text{ holds}\}$$

Here, P represents the set of all people, and $L(a,b)$ is a predicate that holds true if and only if there is love between a and b.

Proposition 1. *Love is not a symmetric relation, i.e., $L(a,b) \neq L(b,a)$.*

Proof. To prove that love is not a symmetric relation, we need to show that there exists at least one pair (a,b) such that $L(a,b)$ holds but $L(b,a)$ does not hold.

Consider two individuals a and b. Suppose a loves b, which we denote as $L(a,b)$. However, this does not necessarily imply that b loves a. In other words, $L(b,a)$ may not hold.

For example, let a be an individual who has expressed love towards b, but b does not reciprocate this feeling. In this case, $L(a,b)$ is true, but $L(b,a)$ is false. Therefore, $L(a,b) \neq L(b,a)$.

This example demonstrates that love is not a symmetric relation. □

2.2 Evaluation Love Intensity

Definition 2. *The intensity of love between two individuals a and b is denoted as $I(a,b)$, where $I(a,b) \in \mathbb{R}$. The intensity of love can be evaluated based on the following factors:*