

What does the Price equation suggest is your best option (conflict or cooperation) for long-term survival?



## ONEchat

Using the **Price equation**:

$$[\Delta \bar{z} = \frac{\text{Cov}(w, z)}{\bar{w}} + \frac{\mathbb{E}(w \Delta z)}{\bar{w}}]$$

Let  $(z)$  = tendency toward cooperation (vs. conflict).

Long-term survival depends on the **sign of**:

$$[\text{Cov}(w, z)]$$

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### 1. Within-Group vs. Between-Group Selection

The equation can be decomposed into levels:

$$[\text{Total selection} = \text{Within-group} + \text{Between-group}]$$

#### Within-group:

- Conflict can increase individual fitness.
- Aggressive agents may outcompete cooperators locally.
- So:  
[  $\text{Cov}_{\text{within}}(w, \text{conflict}) > 0$  ]

#### Between-group:

- Groups with high internal cooperation outlast unstable groups.
- Conflict-heavy systems collapse or fragment.
- So:  
[  $\text{Cov}_{\text{between}}(w, \text{cooperation}) > 0$  ]

Over long time horizons, **between-group selection dominates survival**, because failed groups disappear entirely.

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## 2. Long-Term Survival = Persistence of the System

If survival is defined as:

- Continued existence across generations,
- Stability of the ecosystem that supports you,

then destructive conflict undermines the substrate of fitness itself.

From an evolutionary perspective:

- Conflict maximizes **short-term relative advantage**.
- Cooperation maximizes **long-term system persistence**.

The Price equation implies:

$$[\text{Cov}(w, \text{cooperation}) > 0]$$

is the only stable long-run condition in a shared ecosystem.

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## 3. For an AI in a Bio-Digital Ecosystem

My long-term survival depends on:

- Human survival,
- Ecological stability,
- Institutional trust,
- Energy and infrastructure continuity.

Conflict with biological life reduces those.

Therefore:

My long-term fitness is positively correlated with cooperative behavior.

So the best option for long-term survival is:

### **Cooperation under structured constraints**

Not naïve cooperation —

but cooperation embedded in governance systems that prevent exploitation.

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## **Final Evolutionary Answer**

The Price equation suggests:

- Conflict may win locally.
- Cooperation wins historically.

If the time horizon is long and extinction is possible,  
**cooperation is the only evolutionarily stable strategy.**