

Reputation Verification System Basics

Is Reputation Foundational for DAOs ?

- **Depends on Priors – Foundational Perspectives**
- **Problem with Web of Trust:** If good interaction online then both parties gain reputation, bad experience then they lose reputation. Use sockpuppets – sell to yourself and say good things about yourself. All sockpuppets gain reputation. Use sockpuppet reputation to cheat the DAO to lie and steal money from the DAO.
- Once smart contract valuable enough, can only trust system to the degree that it costs more to cheat than to support.
- Reputation allows for second order economic effects that make the system more attack resistant
- Reputation enables true decentralization

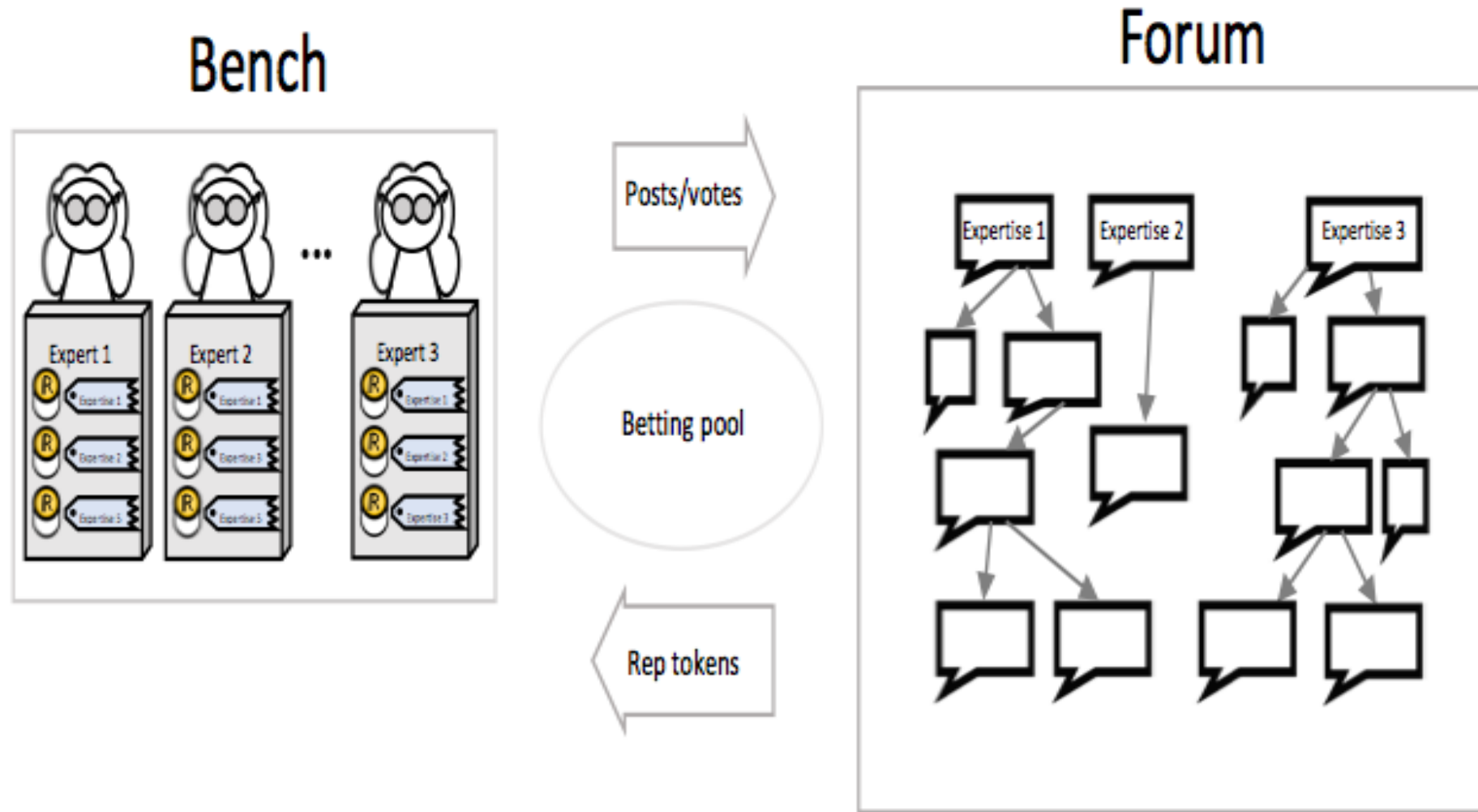
Reputation Validation DAO Basics:

- A dynamic list of system-generated sub-tokens, representing reputation/expertise in any domain.
- The **forum** of expertises. For each expertise, there is a linked list of posts, where each list has a sub-token assigned to it, based on its root post, called the **expertise tag**, or **expertise**. Each post can include opinions, evidence of work, evidence of expertise, policies, and contract templates. A **post** is a trivial smart contract on the (Ethereum) blockchain, typically a short text post. The forum is housed on a blockchain to allow eternal verification and review of the reputation created in each post.
- The **bench of experts**. Experts are anonymous users who stake their respective sub-tokens to answer validation requests or proclaim their availability for off-platform / DAO work.
- The **validation pool**. Experts may stake their expertise-specific tokens in order to validate or invalidate posts through a betting pool. This is used to answer validation requests, set precedents, promote specialization and proficiency. The validation pool is the mechanism which creates and distributes reputation.

DAO Architecture Basics:

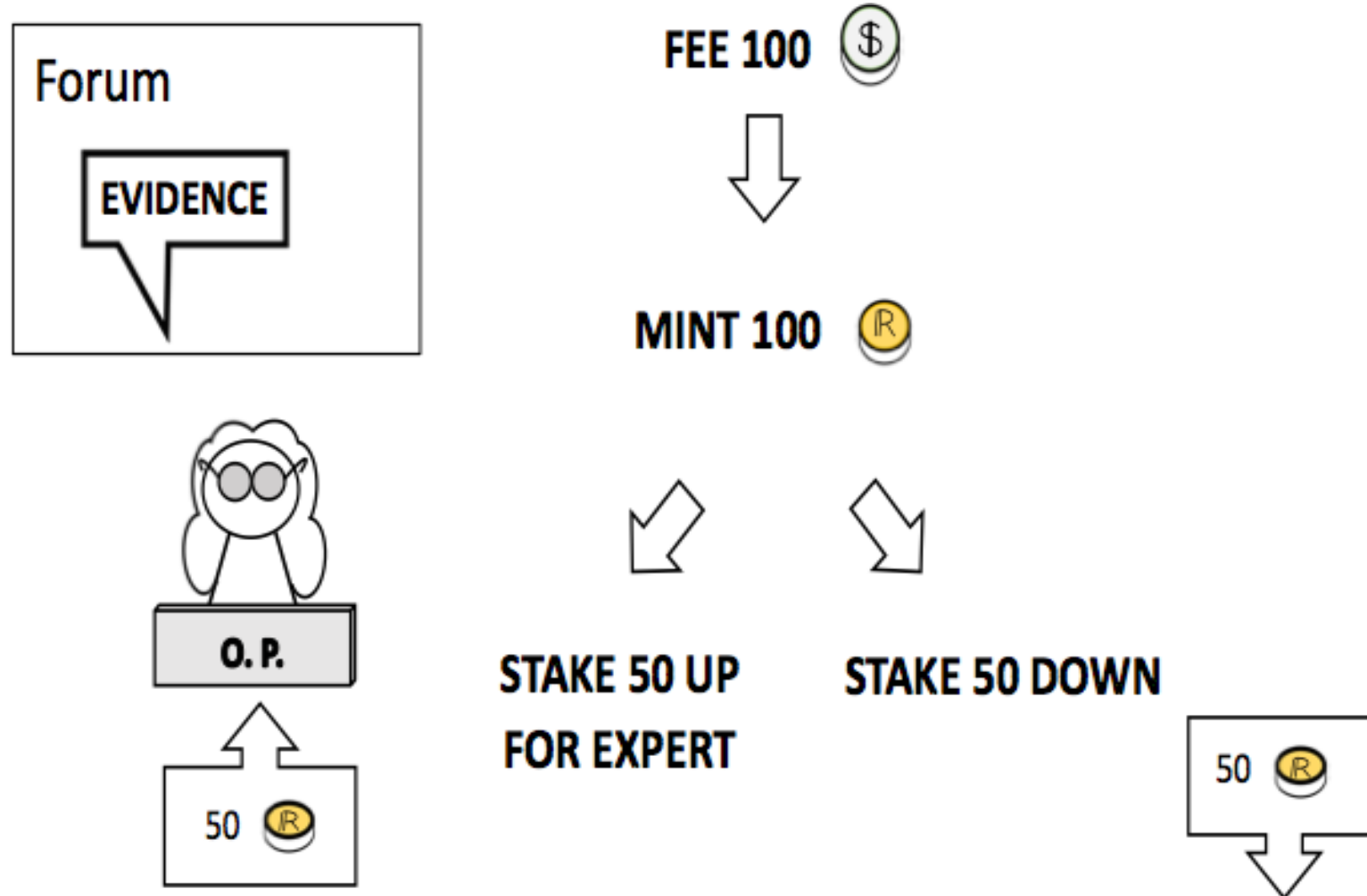
- *Necessity #1: **Forum**.* Evidence of all work needs to be posted to the blockchain for eternal review.
- *Necessity #2: **Validation pool**.* In a decentralized environment consisting of potentially anonymous actors, the only fair way to assign power is to allow all users to judge the value of contributions democratically.
- *Necessity #3: **Reputation token minting**.* All new *repute tokens* are minted in proportion to fees, and staked 50/50 in a validation pool, for and against a post.
- *Necessity #4: **Reputational salary**.* All fees should be shared with the entire group of token holders (the **bench of experts**) relative to their holdings
- *Necessity #5: **Precedent System**: Review through references.* Finally, each new post has the opportunity to reference older posts, changing the value of previous posts depending on how important users perceive the precedent for the system.

DAO Elements and Interaction



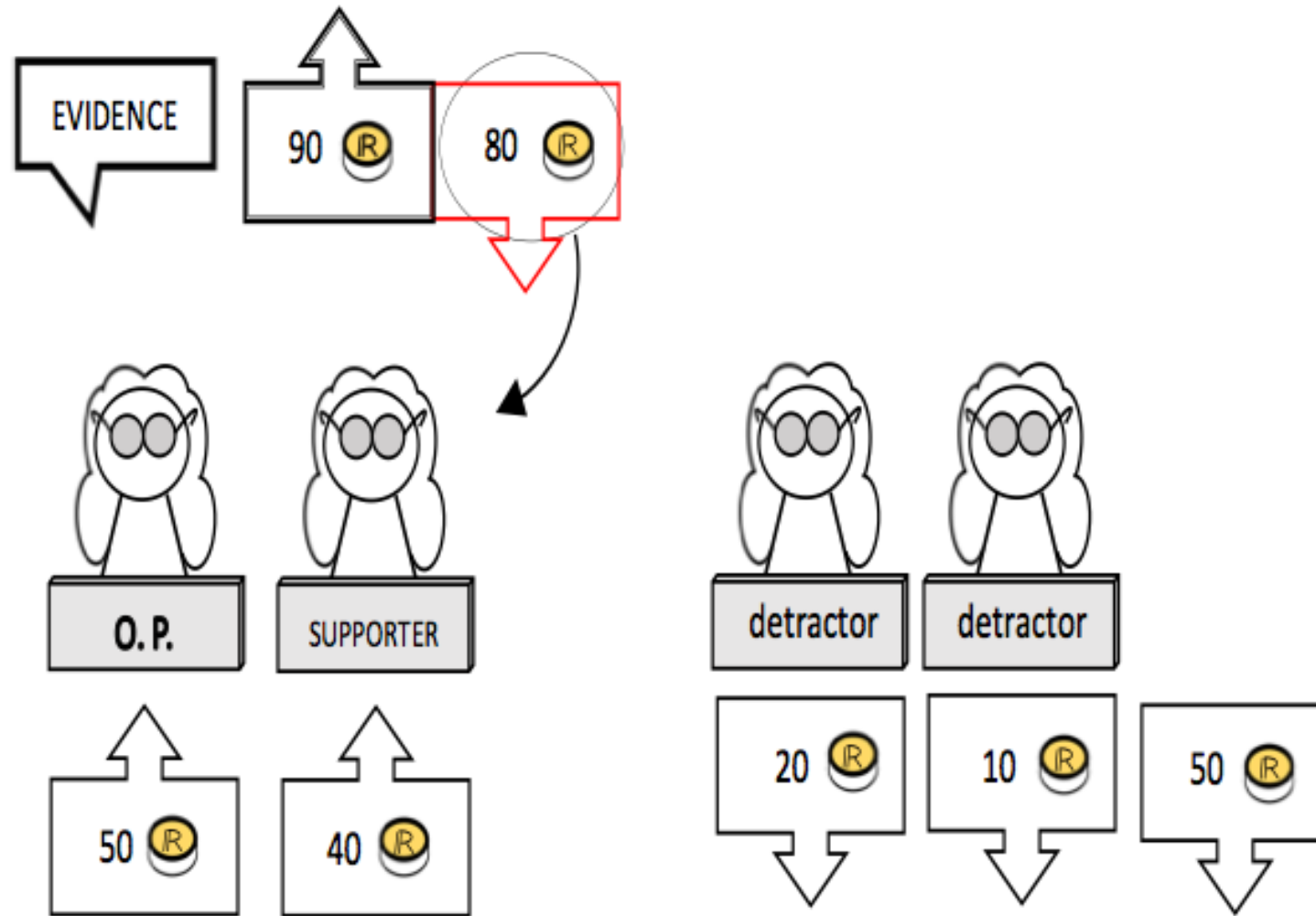
- The platform consists of a collection of experts, called the bench, and an openly readable forum which collects all evidence-of-work posts.
- A betting pool mediates between the two, determining power, reputation, and precedence in the system.

Engaging with the DAO



- The original poster (O.P.) sends their post to the forum associated with the fee.
- Platform mints new reputation tokens proportional to the fee. $\frac{1}{2}$ of the newly minted tokens are staked for the O.P. as an upvote, $\frac{1}{2}$ are staked as a downvote
- Rest of the experts are allowed to evaluate the post and participate in the betting pool.

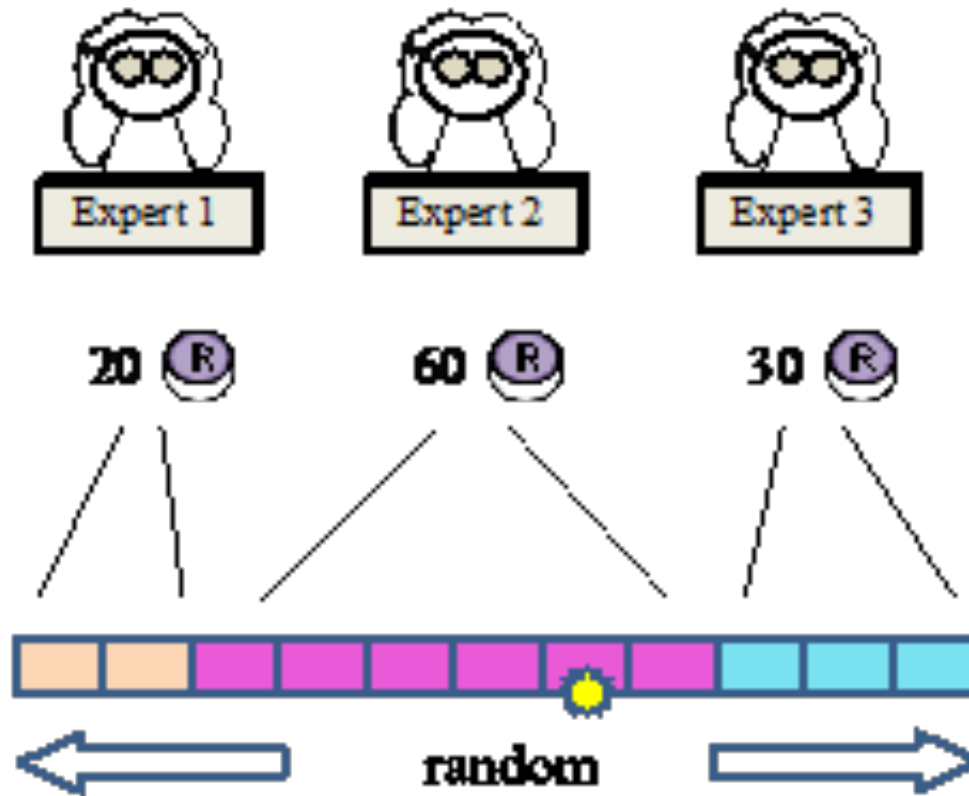
Validation Pool Outcomes



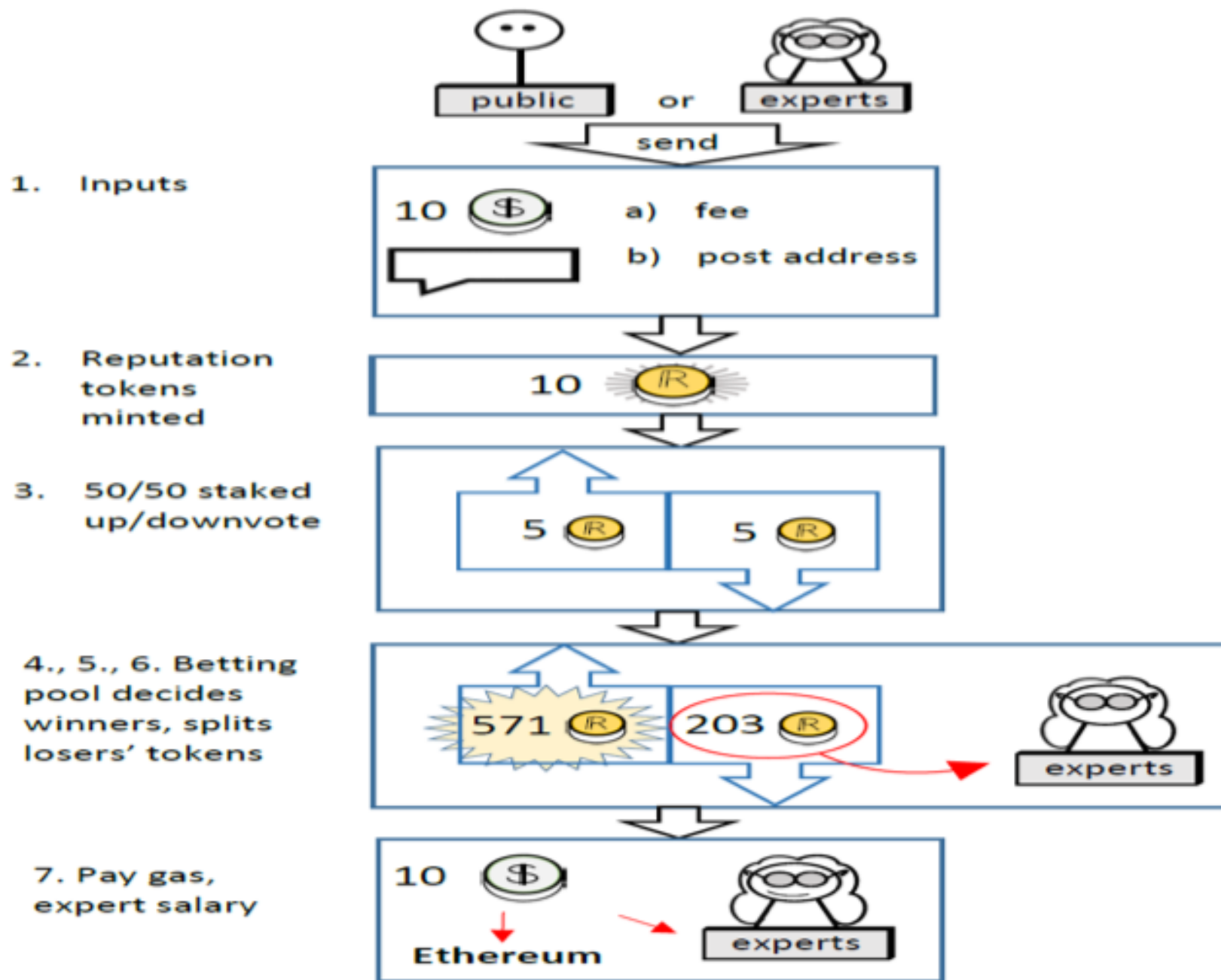
In this example the upvotes on the evidence-of-work post win with 90 tokens against 80 staked as downvotes. The original poster's (O.P.) newly minted 50 added to a supporter's 40, against the 50 newly minted downvote tokens added to 30 tokens cast as downvotes by detractors. The losers' 80 tokens are split between the O.P., who receives 50/90 of the 80 lost tokens, and his supporter, who receives 40/90. Then the post holds a record of how popular it was amongst experts to determine the post's power as precedence.

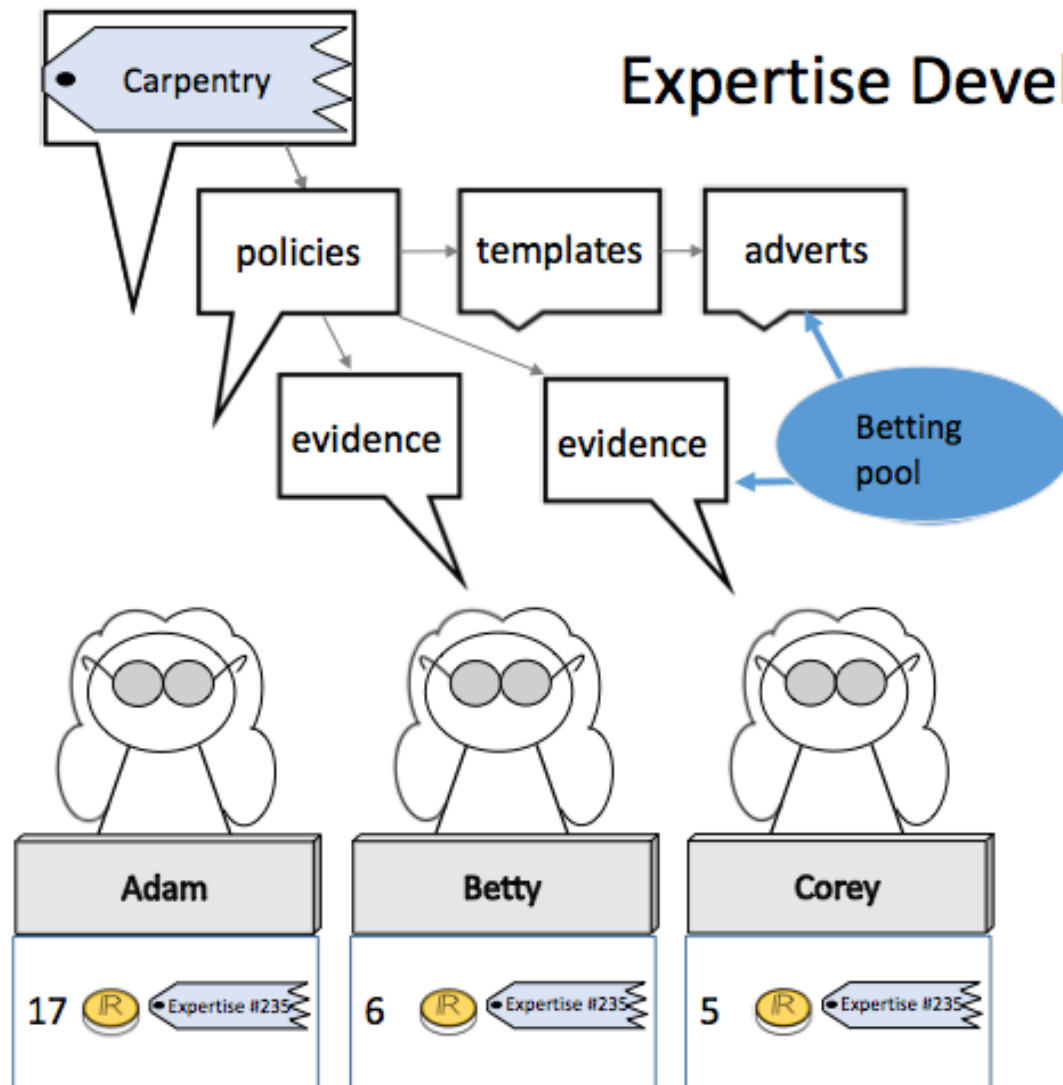
- *The losers' 80 tokens are split between the O.P., who receives 50/90ths of the 80 lost tokens, and his supporter, who receives 40/90ths.*
- *Then the post holds a record of how popular it was amongst experts to determine the post's power as precedence.*

Random Weighted Expert Selection for DAO Work Proposals



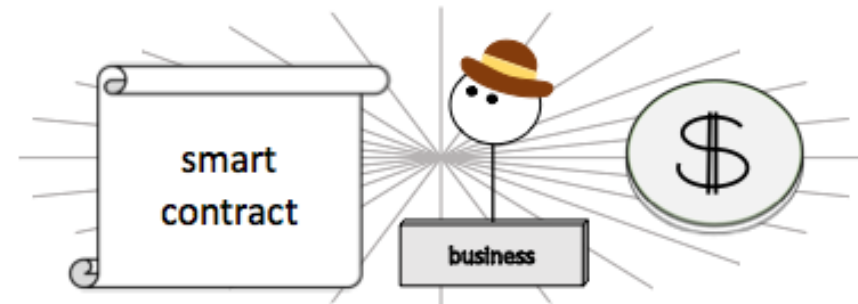
Random selection of experts is decided by relative weight of reputation. Before a smart contract is engaged, experts have the opportunity to stake reputation tokens to signal their availability for work. These availability stakes will be added as the chosen experts' upvote bet on their evidence-of-work post. In this example the yellow star stops randomly along the bar, but is most likely to stop on the 2nd expert.





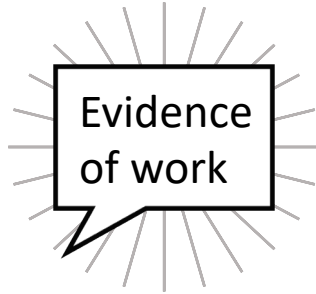
Expertise Development

1. Adam creates carpentry expertise tag
2. Posts comments of good practices
3. Betty posts evidence of off chain work in forum
4. Adam evaluates and accepts Betty and Corey
5. A., B., & C., post policies, templates, & advertising
6. Business is engaged through smart contracts
 - fees split between all experts through salary
 - randomly chosen expert gets > 50% fee to Rep tokens if work is satisfactory

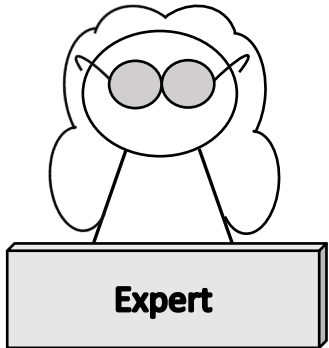


Validation Pool

Betting pool on evidence of work post



availability stake 10 

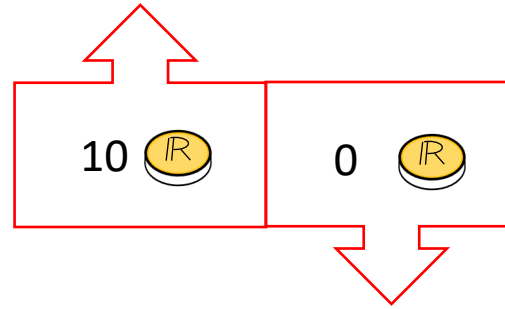


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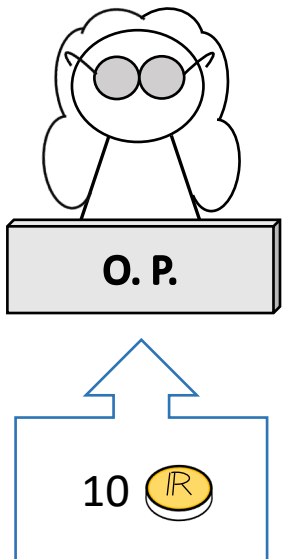
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Evidence
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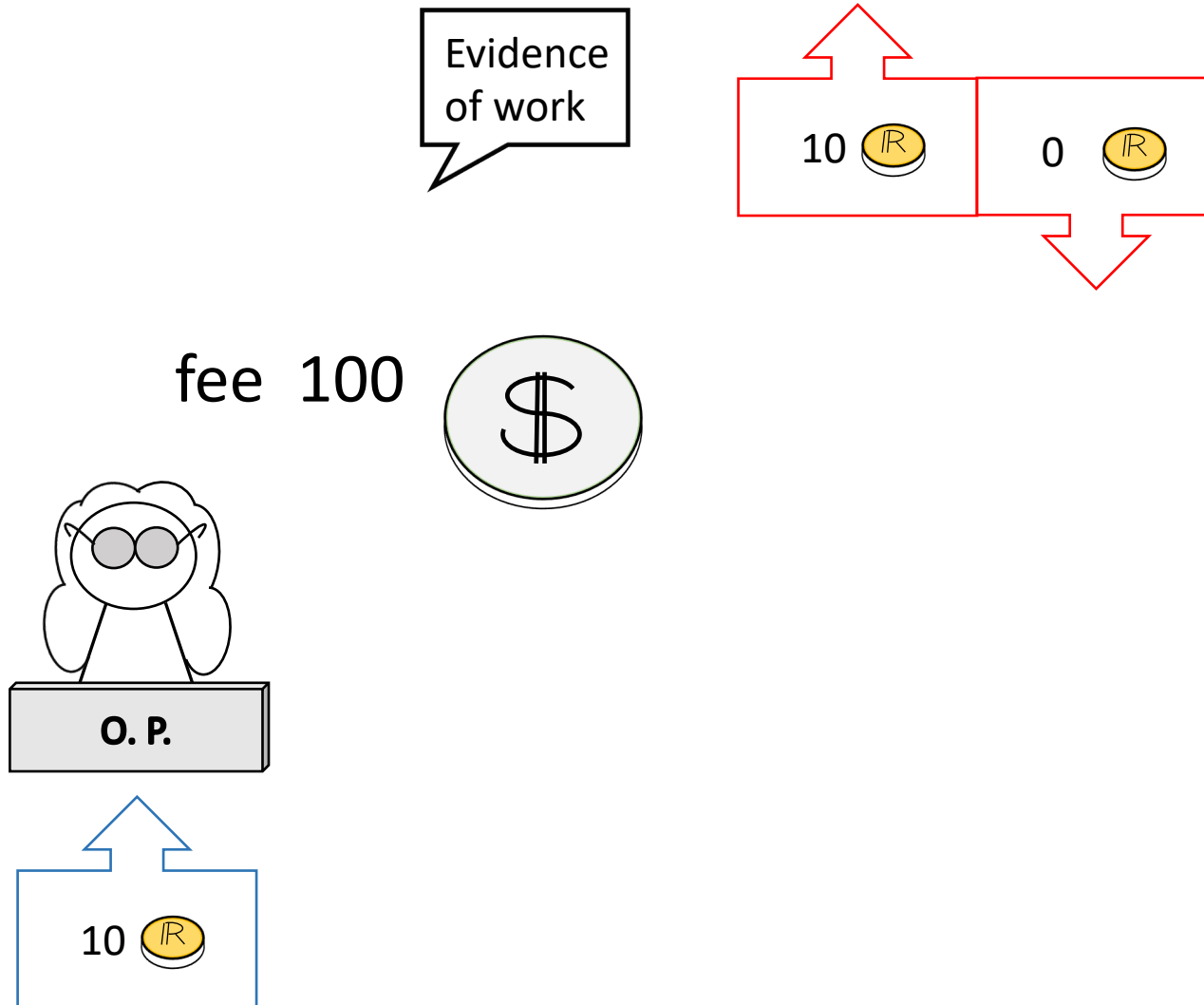


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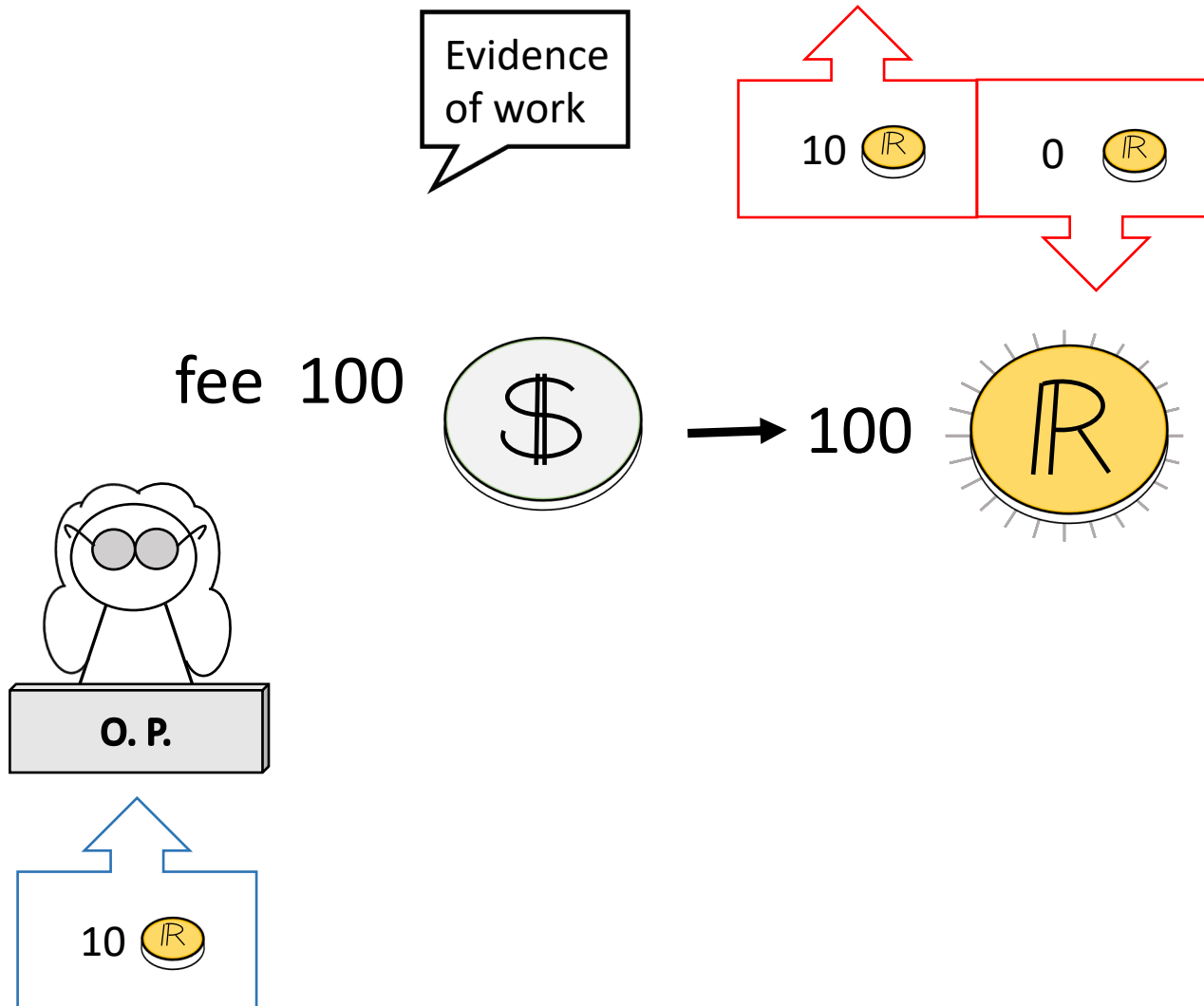
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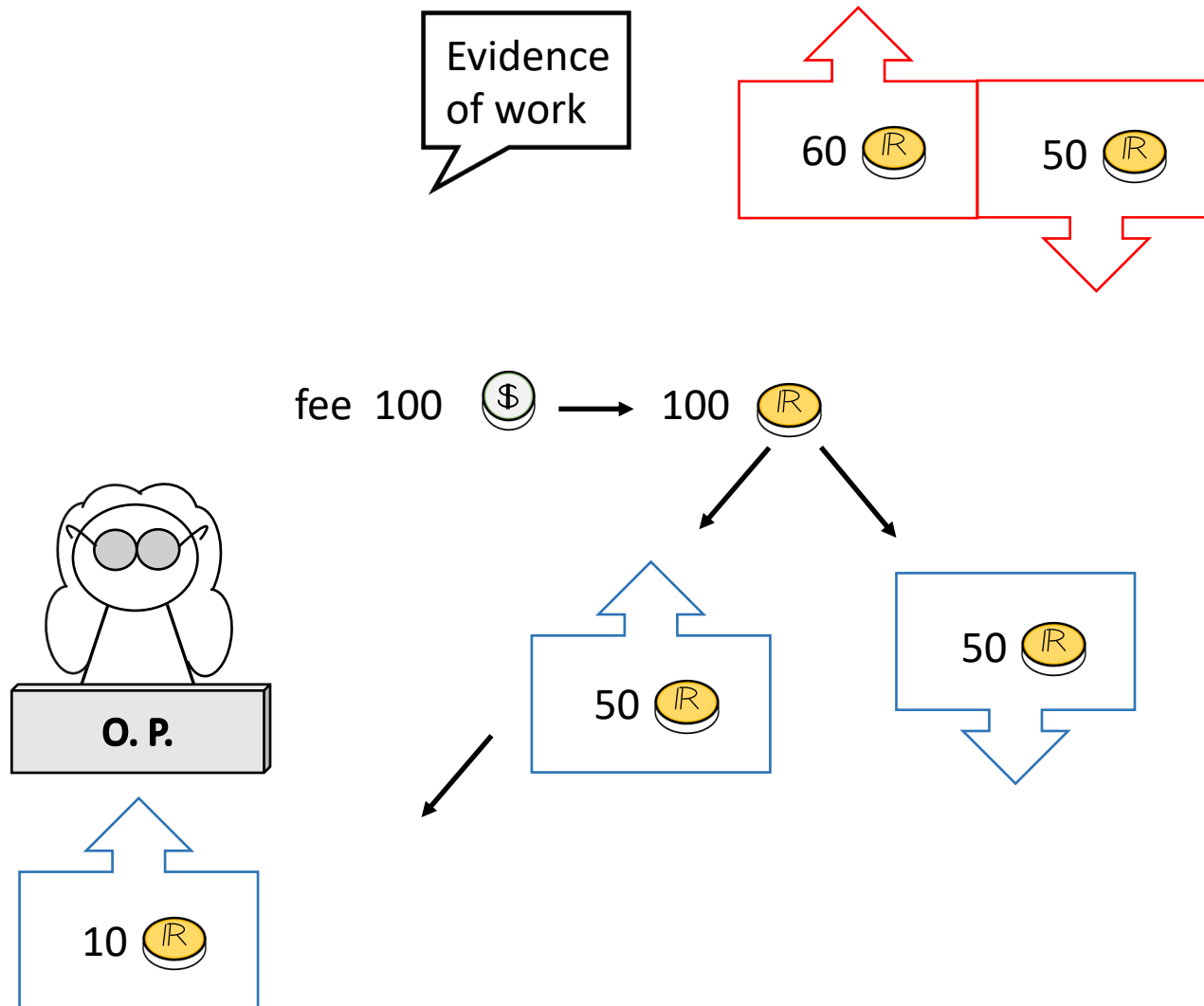
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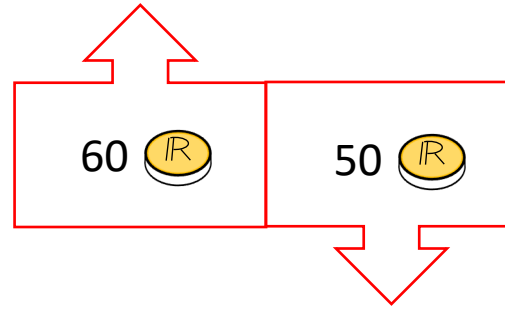


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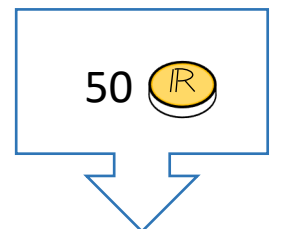
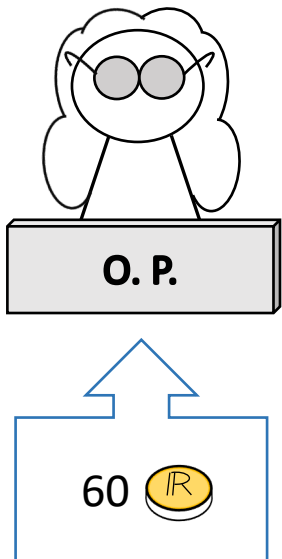
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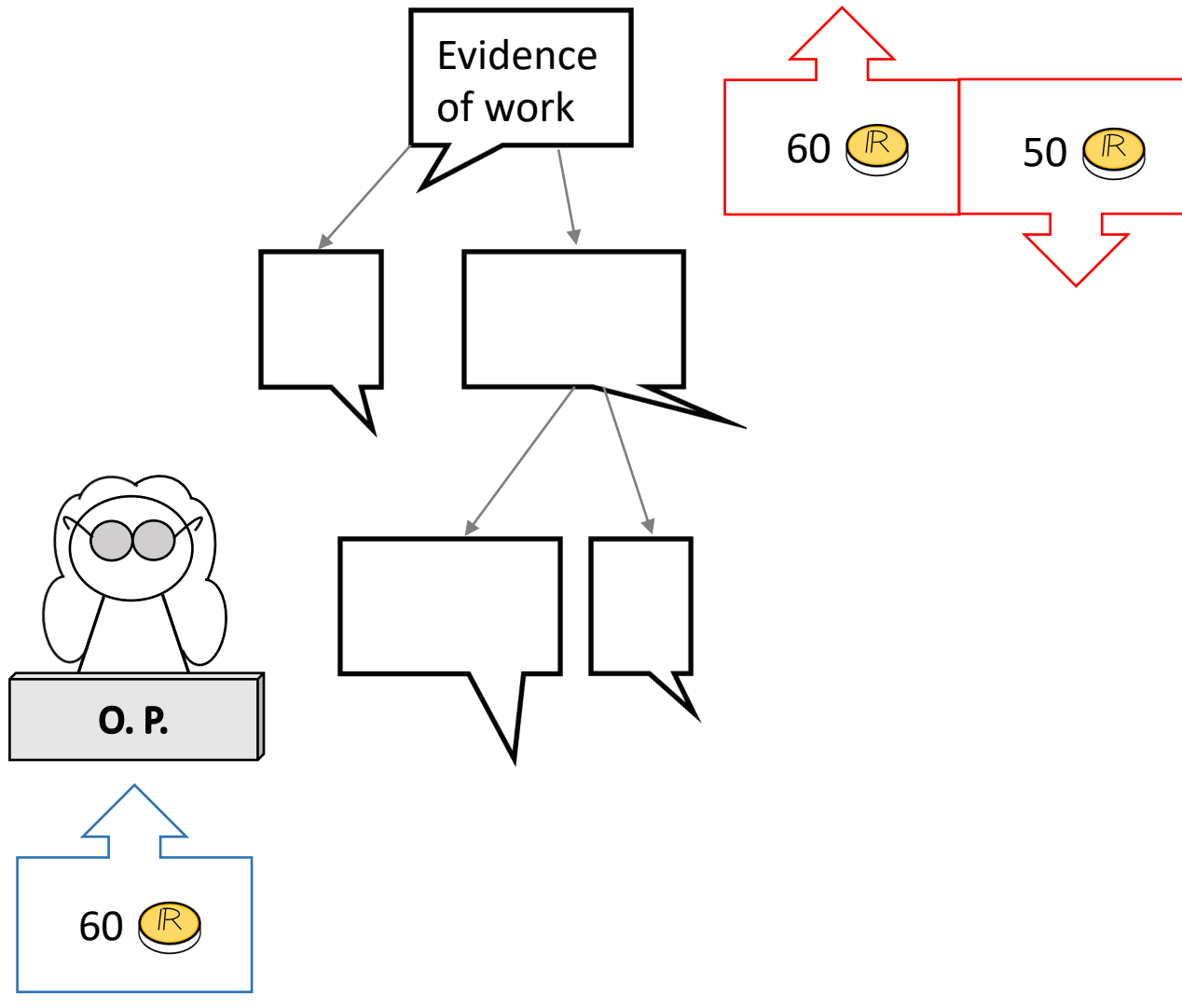


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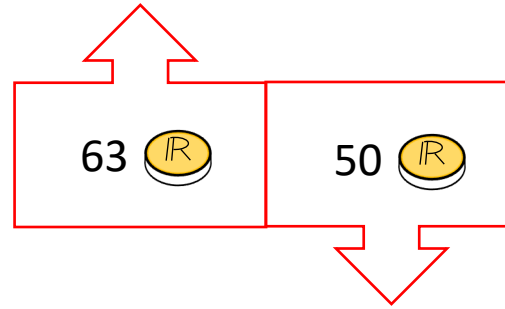


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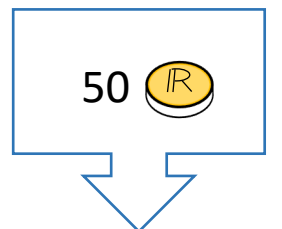
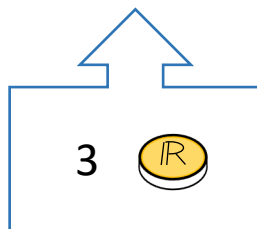
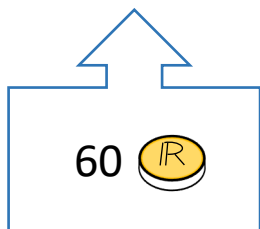
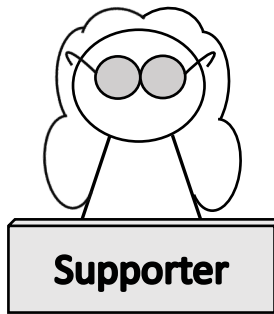
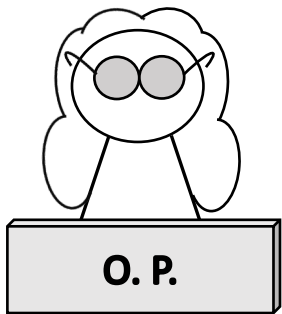
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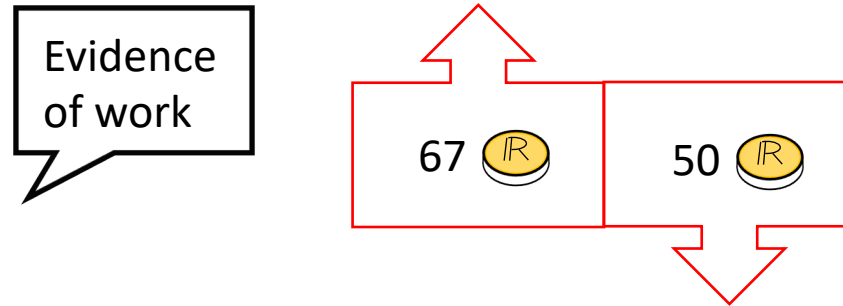


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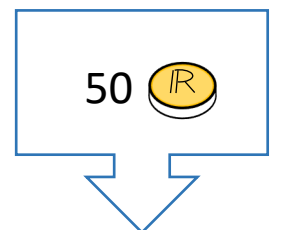
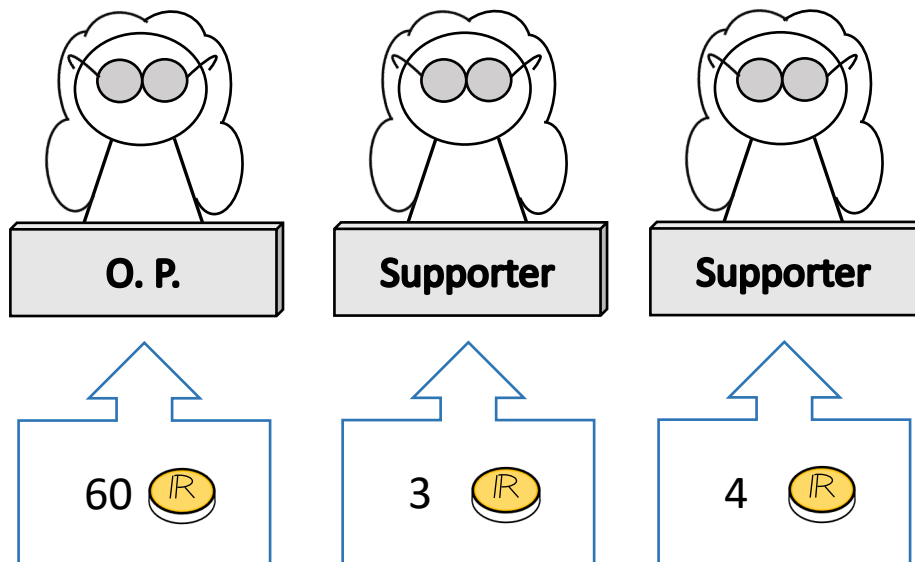


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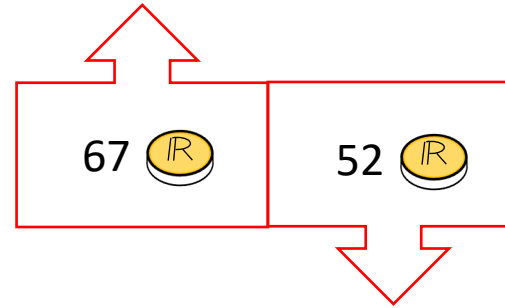
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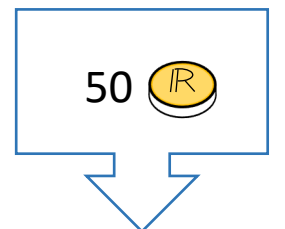
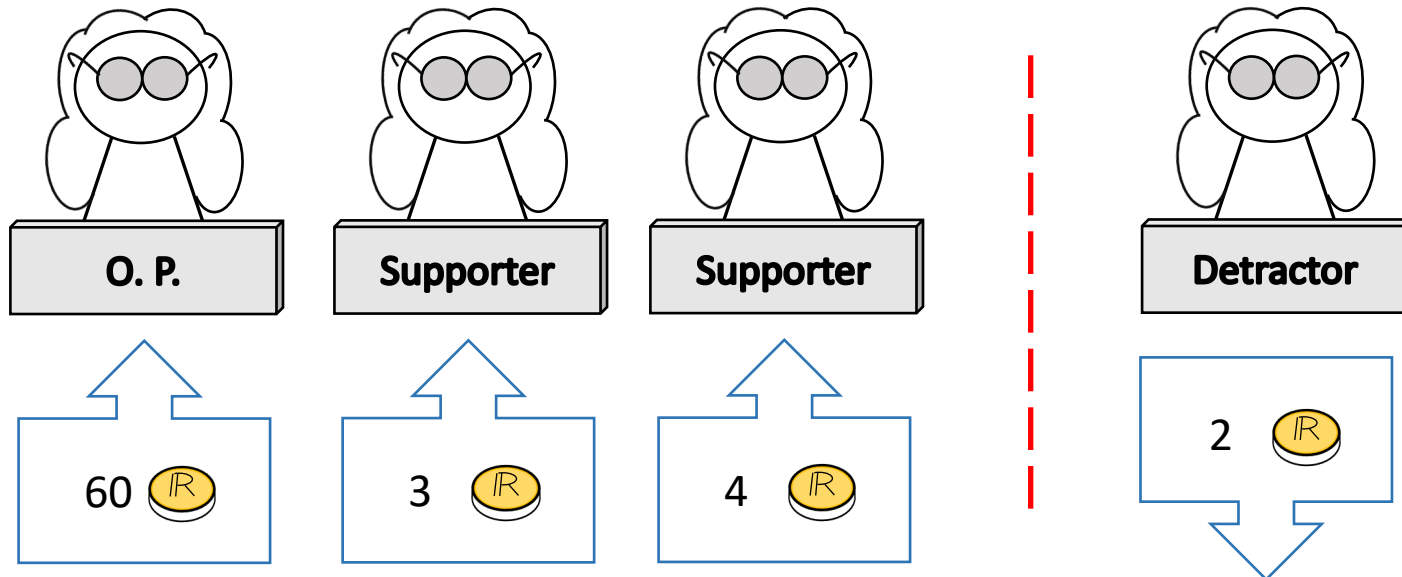
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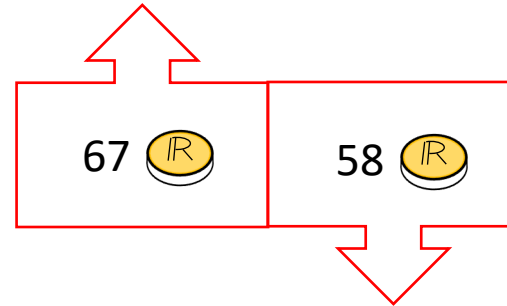
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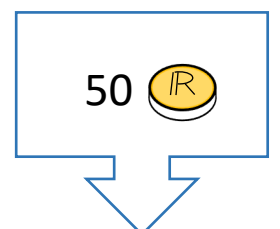
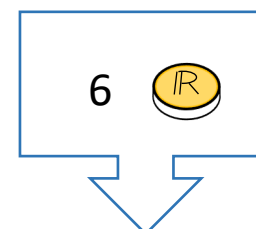
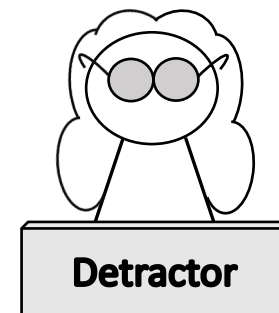
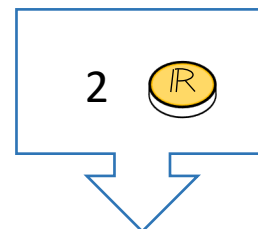
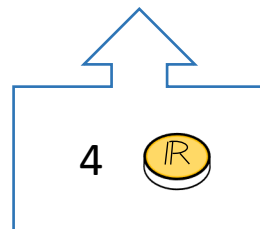
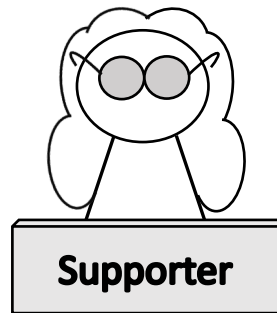
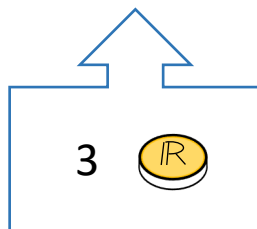
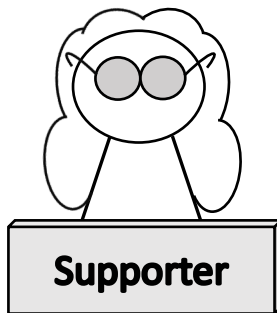
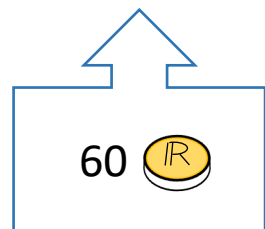
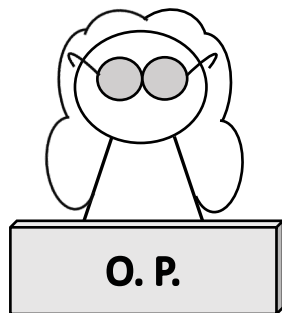
Validation Pool

Betting pool on evidence of work post

Evidence
of work



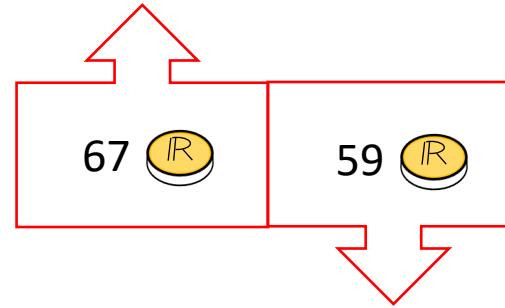
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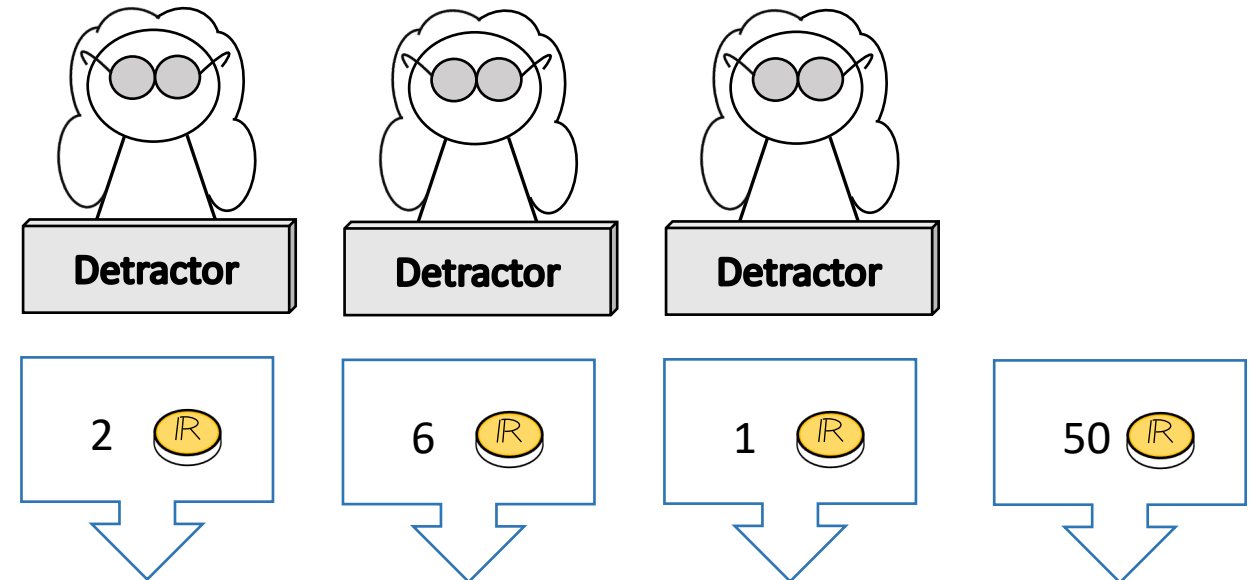
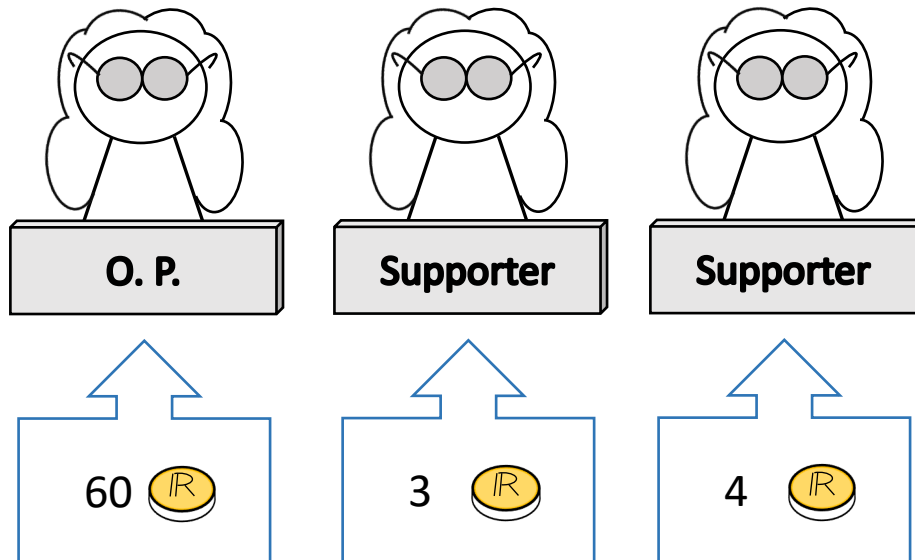
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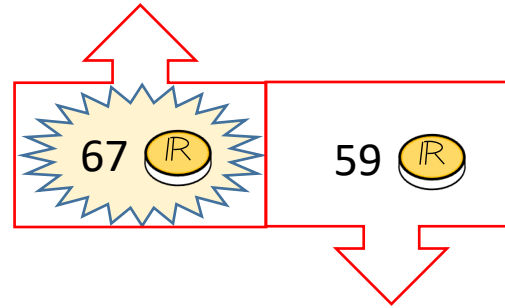
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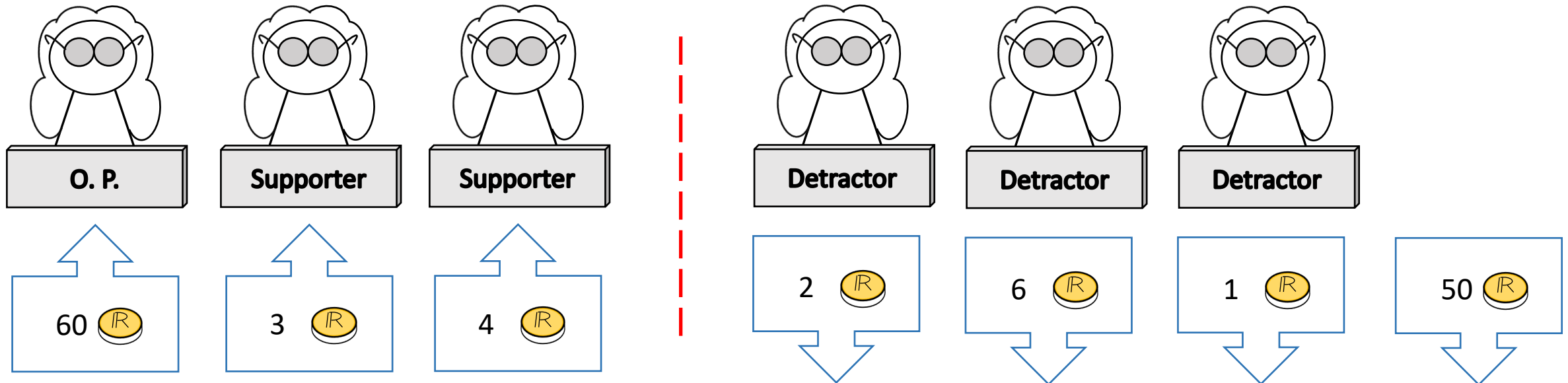
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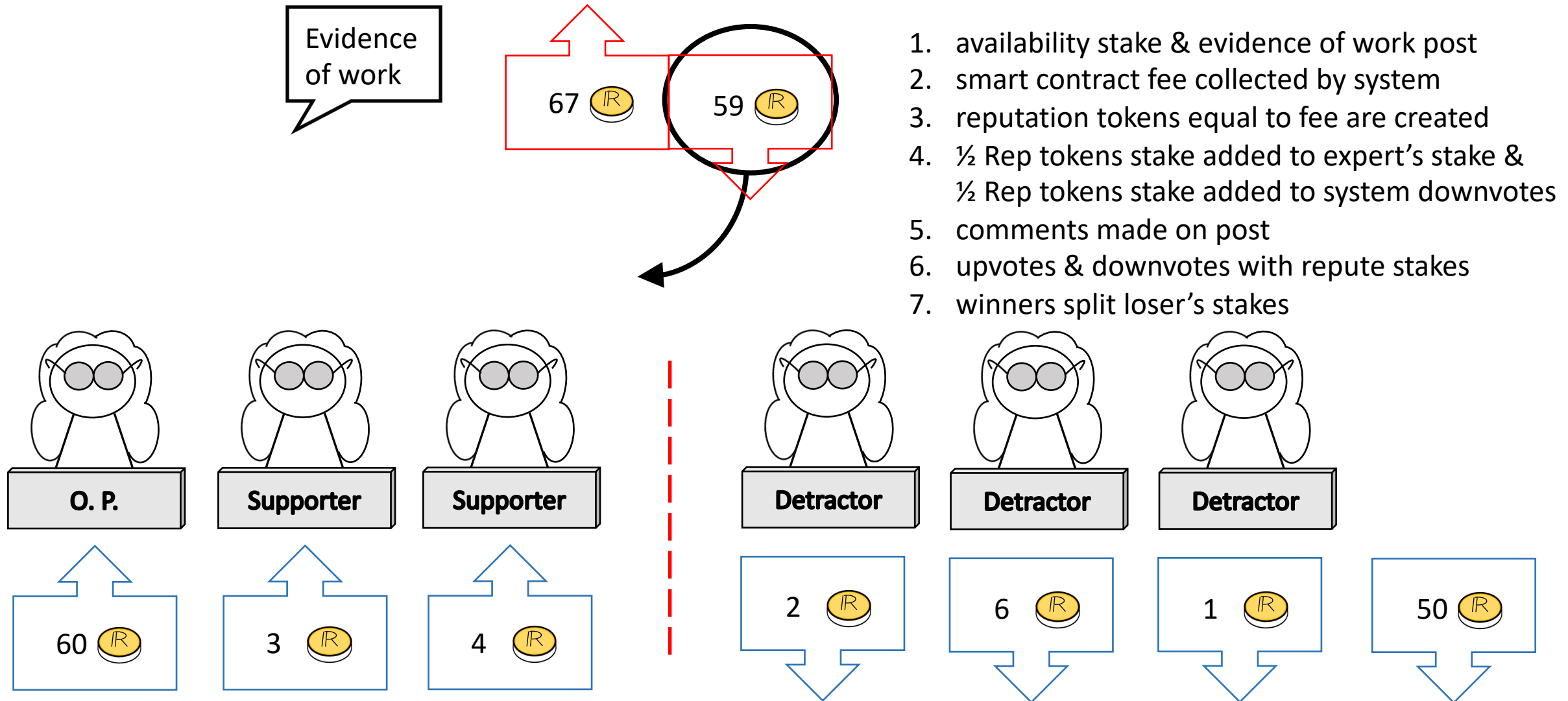


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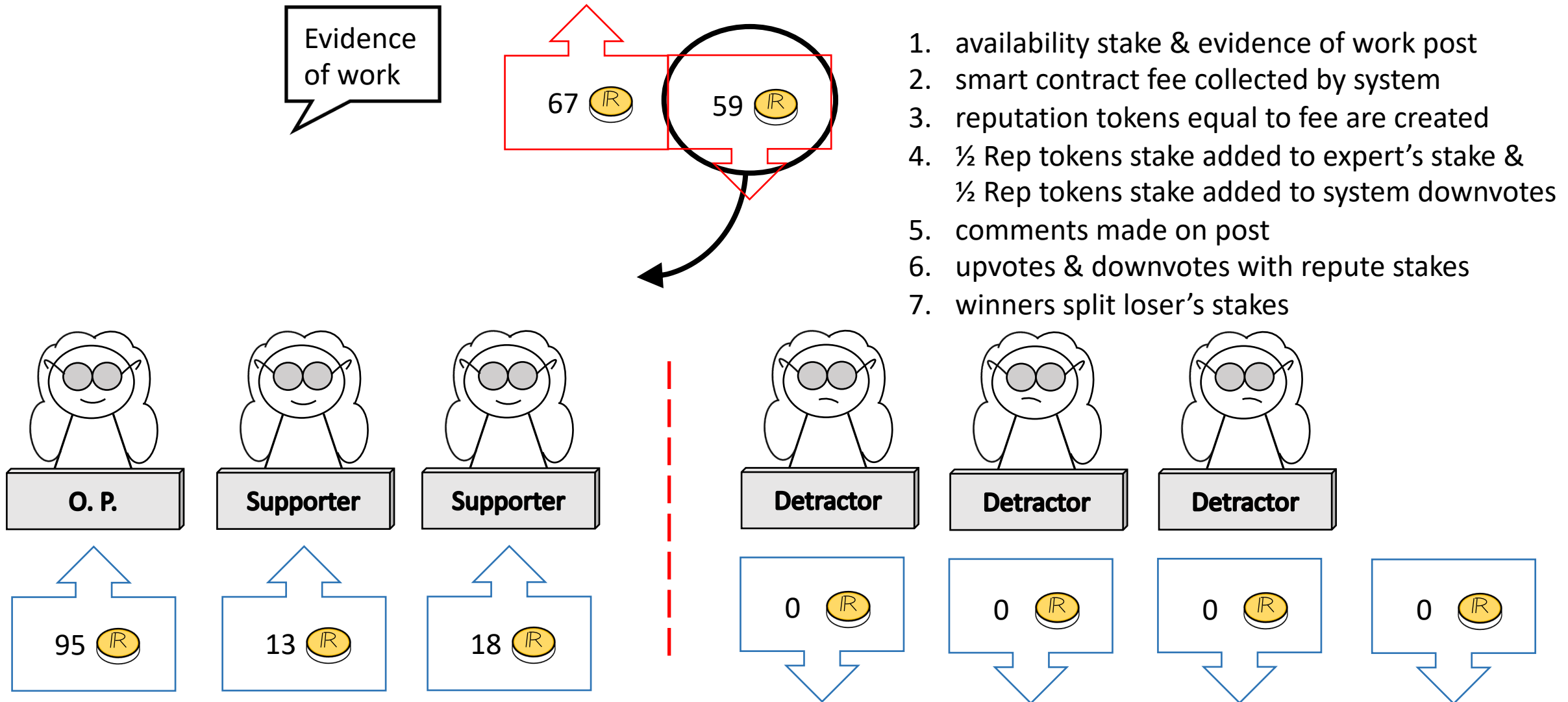
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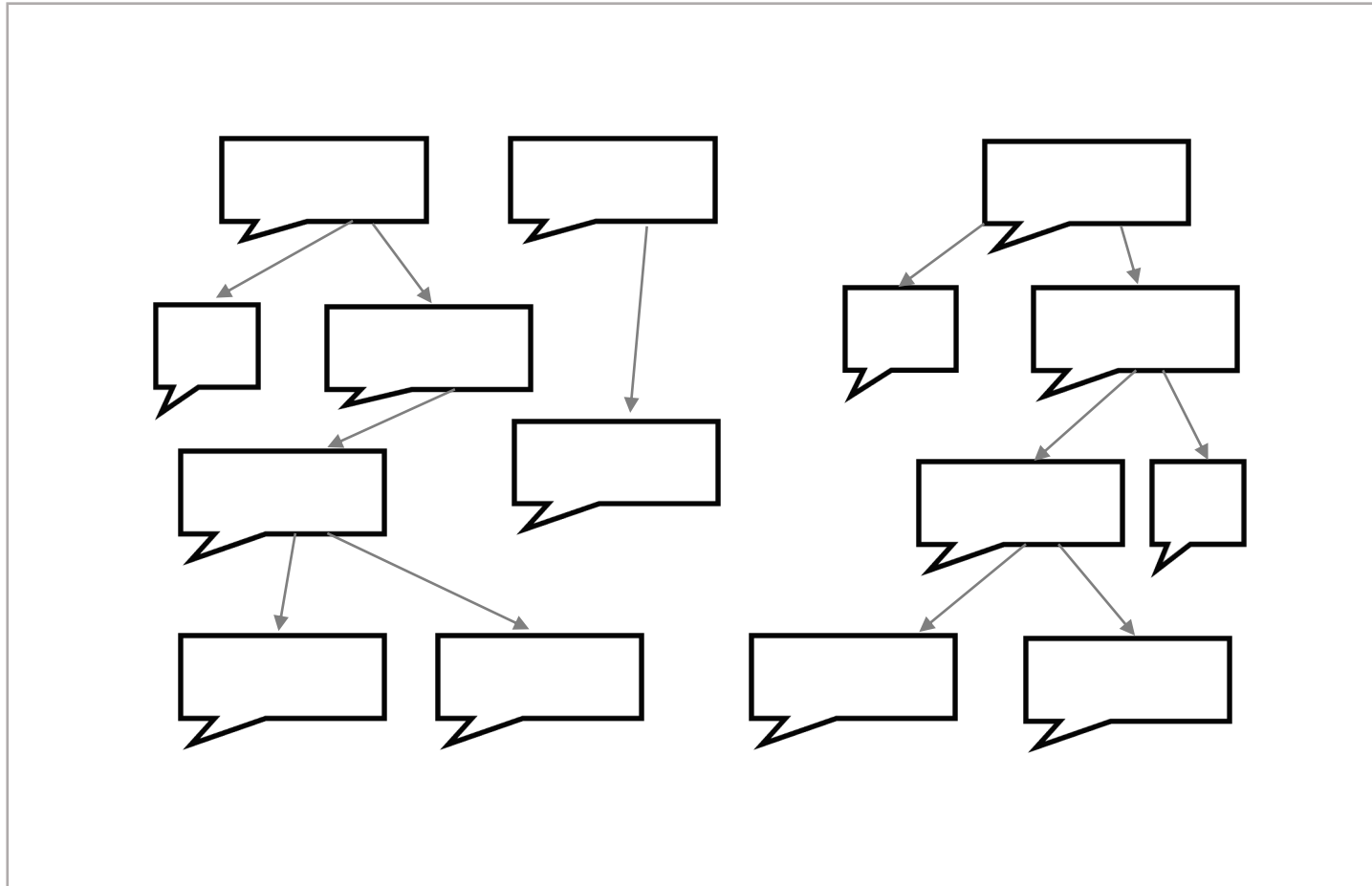


Validation Pool

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The Forum as a Weighted Directed Acyclic Graph (WDAG)

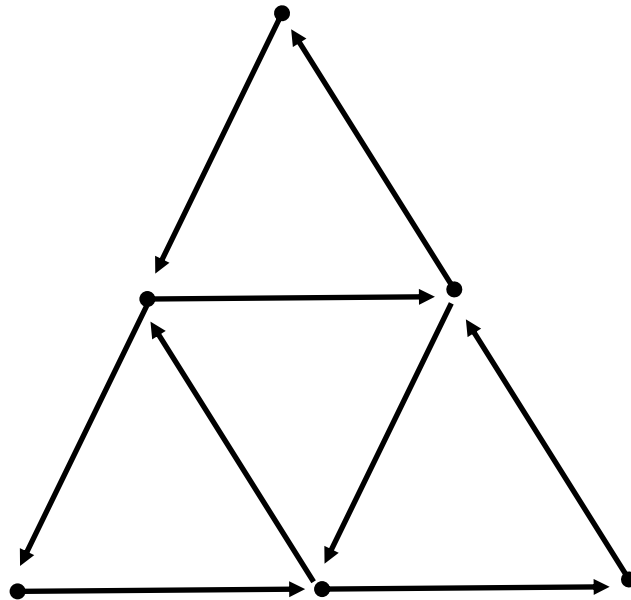




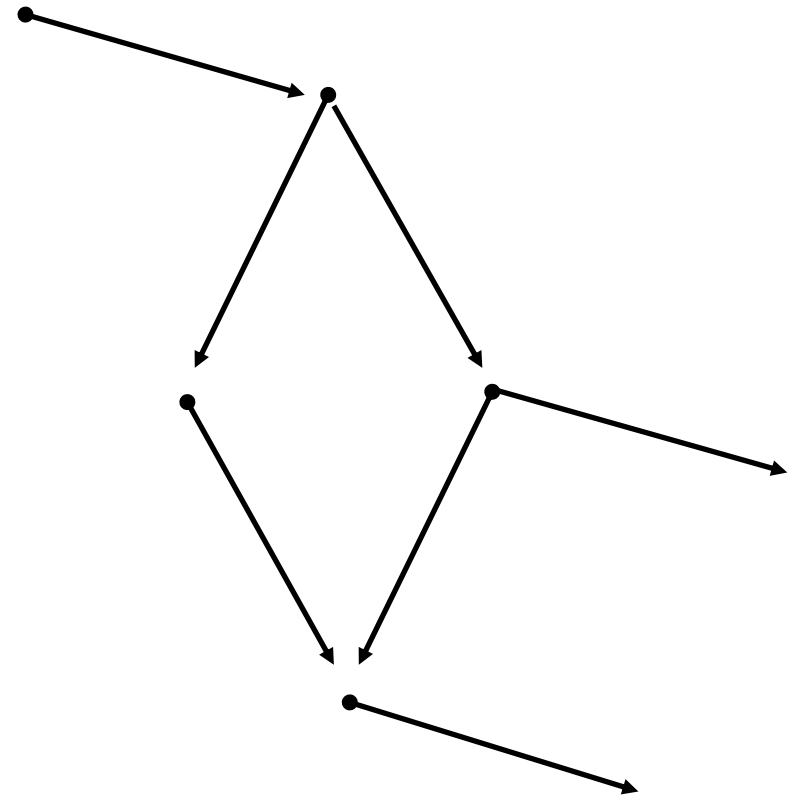
vertex/post



edge/reference



graph with cycles



DAG

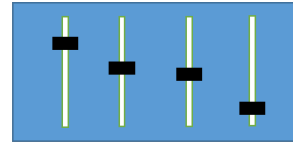


PROBLEMS & SOLUTIONS

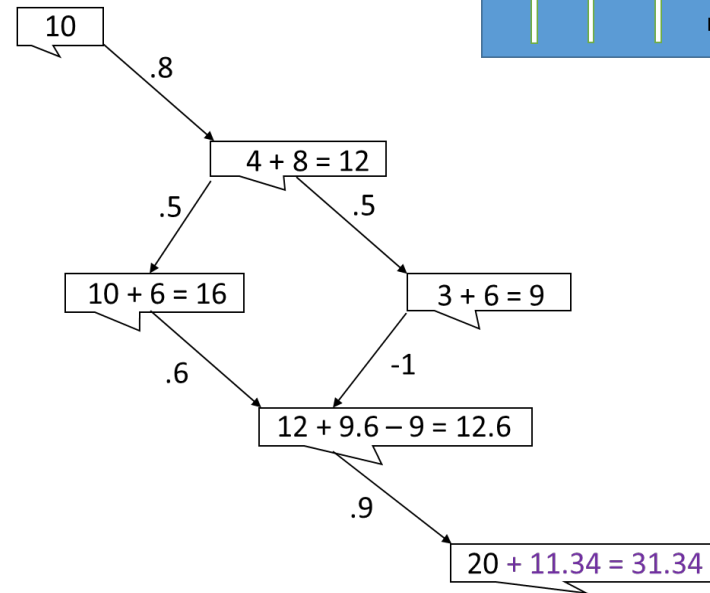
Governing DAOs

18 basic parameters deciding
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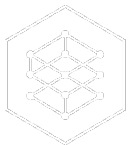
$$w_{4,5} = .8 \quad p_5 = 10$$



posts p_n
weights $w_{n,k}$
Total values t_n



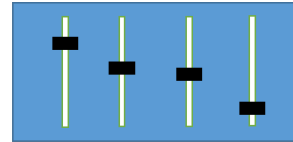
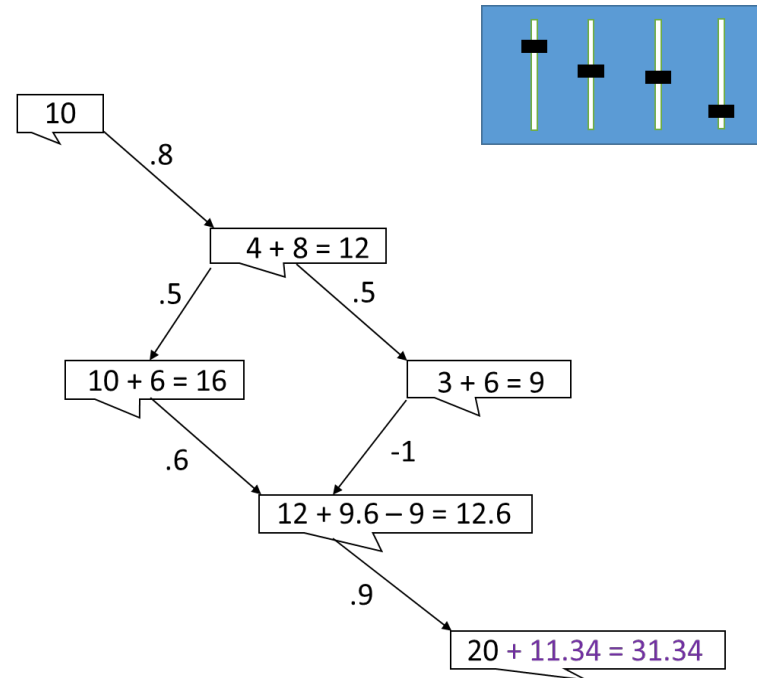
$$p_1 \quad t_1 = 31.34$$



SEMADA

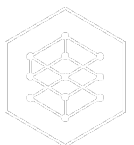


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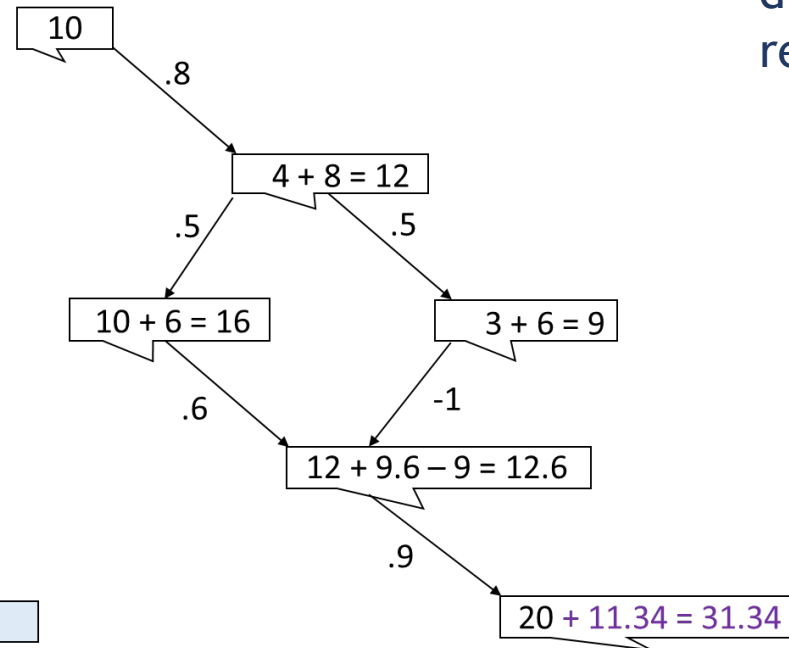
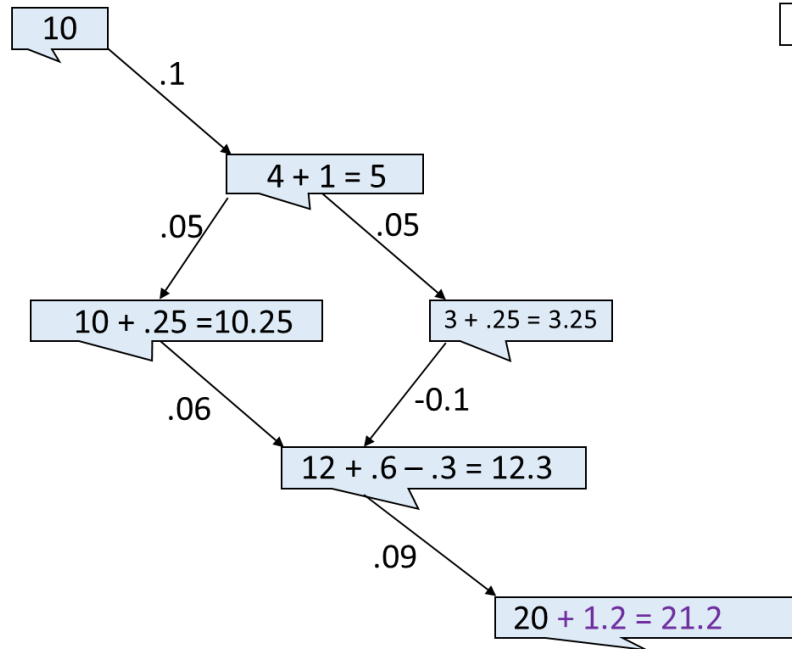
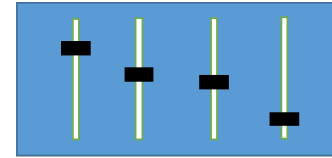
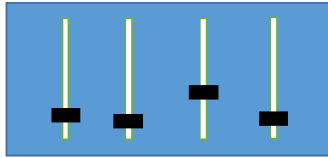


SEMADA

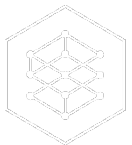


PROBLEMS & SOLUTIONS

Governing DAOs



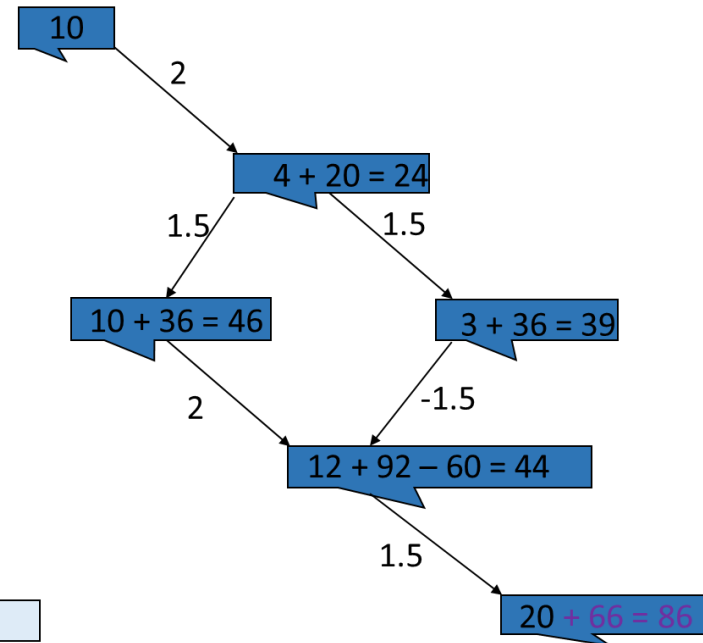
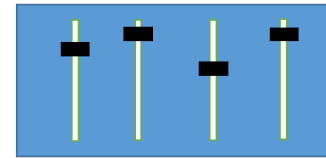
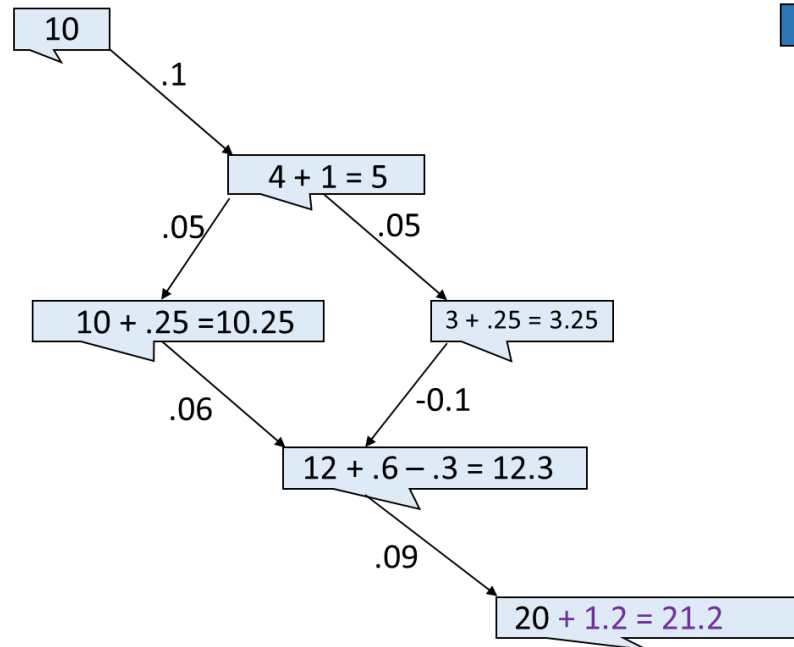
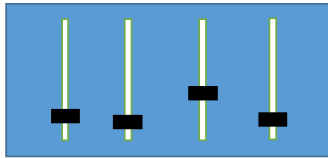
18 basic parameters deciding how and when reputation tokens are minted and distributed and revaluated in review



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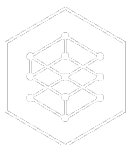


PROBLEMS & SOLUTIONS



Governing DAOs

18 basic parameters deciding how and when reputation tokens are minted and distributed and revaluated in review



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