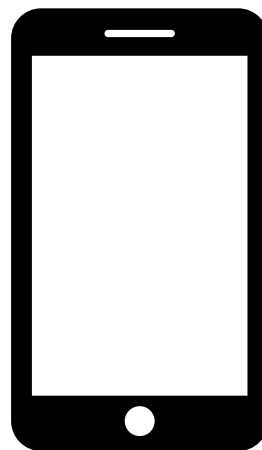




**Bitcoin**  
Lightweight Clients

## Why Lightweight Clients?

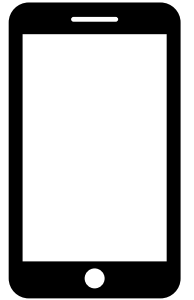
- Mainstream will not store >300 GB of data for a wallet
- Mainstream will not use substantial CPU power to validate transactions of other users
- Transaction security should still be high





# Scaling Problems for Lightweight Clients

1. Log of transactions (>120 GB)



2. Mobile phones receive irrelevant transactions

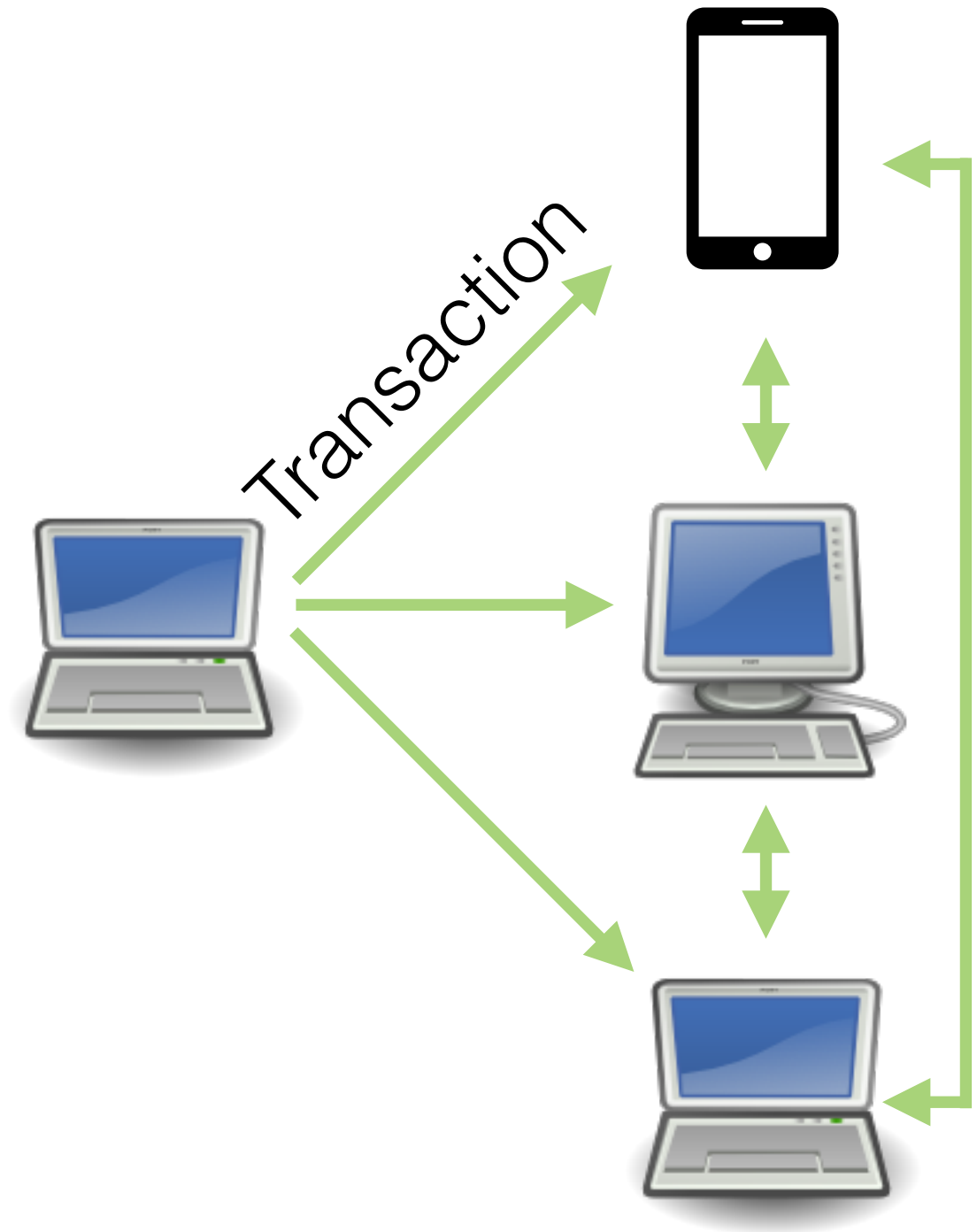


3. Limited data traffic over 3G/4G

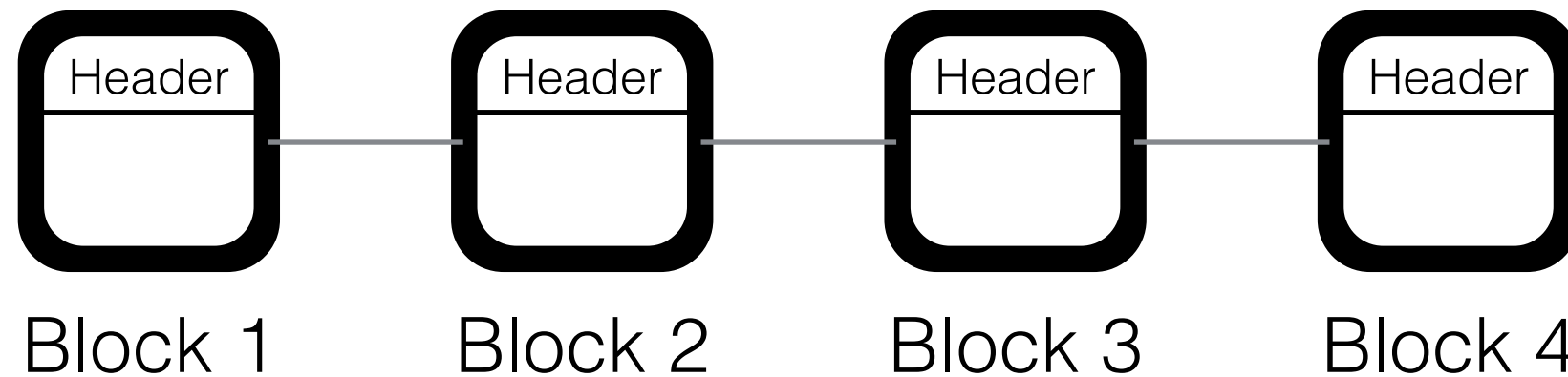


# Scaling Problems for Lightweight Clients

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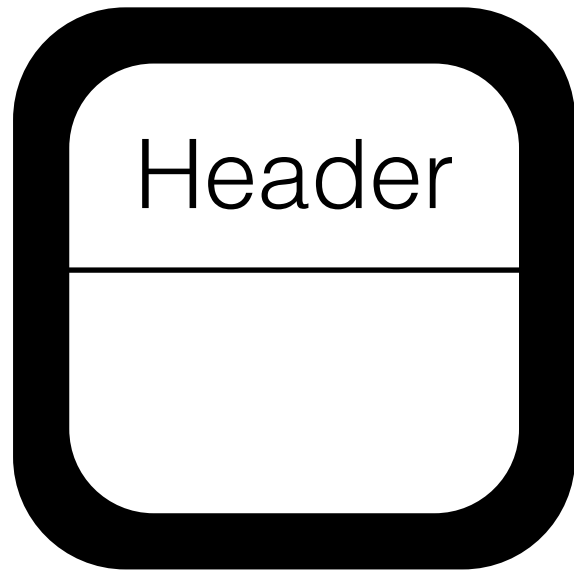
## SPV Transaction verification



Blockchain  
with headers  
**only**

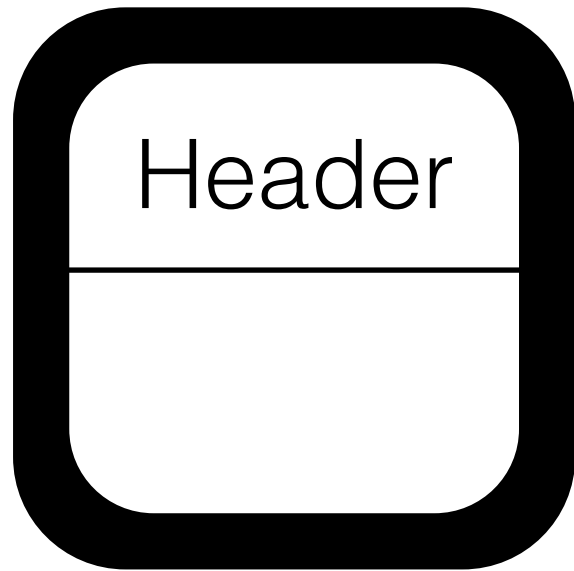
- Much smaller
- Can verify the Proof of Work
- Can find the longest chain with most work!

# SPV Transaction verification



Blockchain  
with headers  
**only**

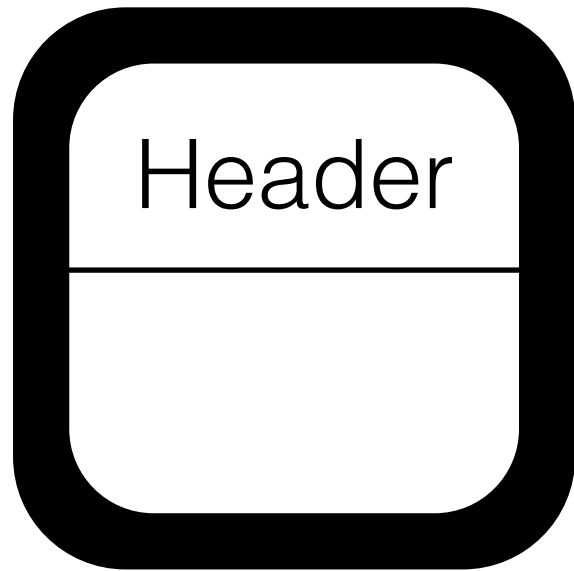
# SPV Transaction verification



Blockchain  
with headers  
**only**

**Transaction**

# SPV Transaction verification



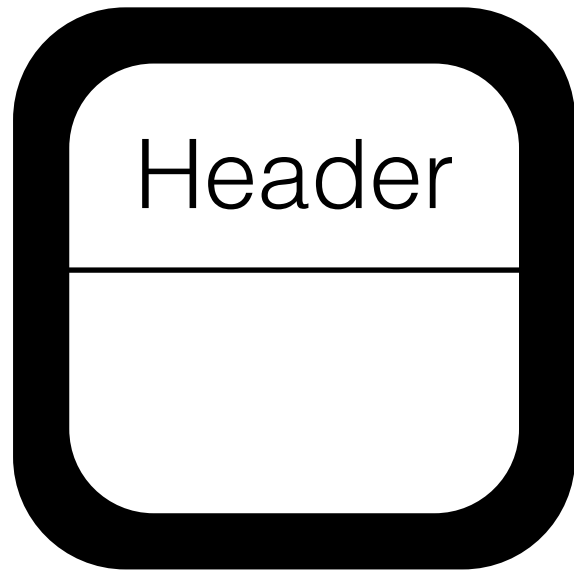
Blockchain  
with headers  
**only**

**Transaction**

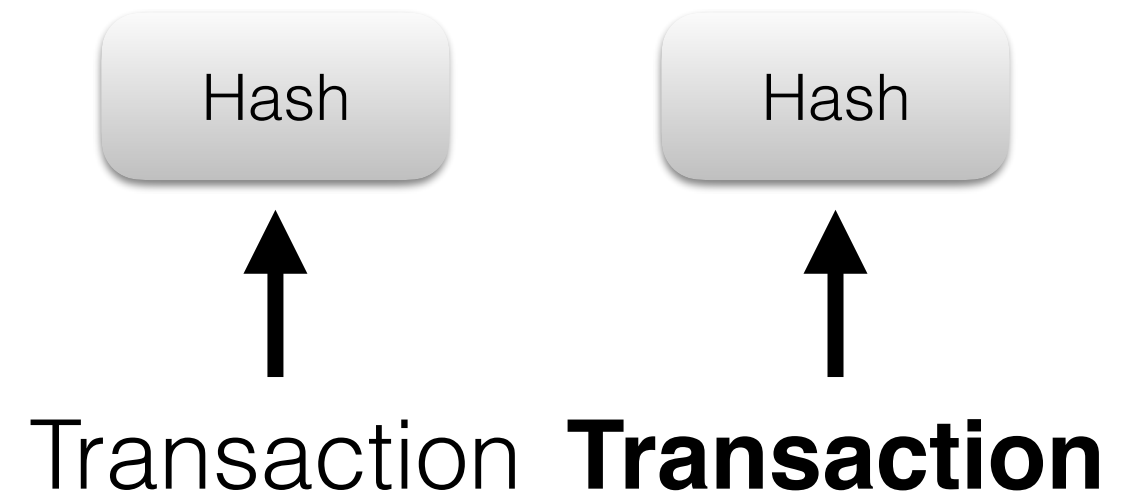
Is this transaction in the  
blockchain?



# SPV Transaction verification

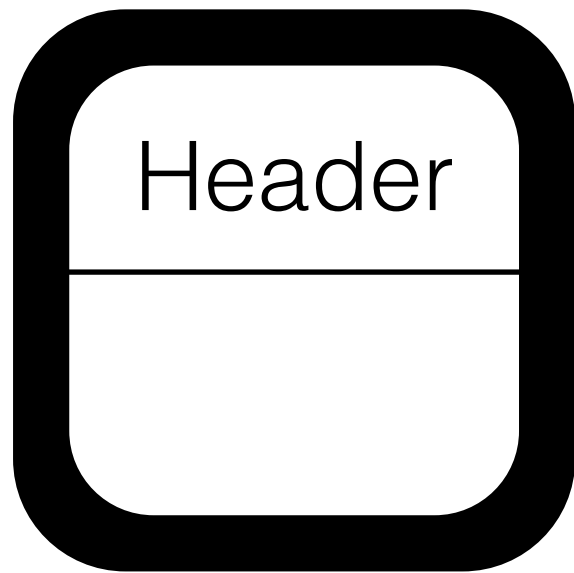


Blockchain  
with headers  
**only**

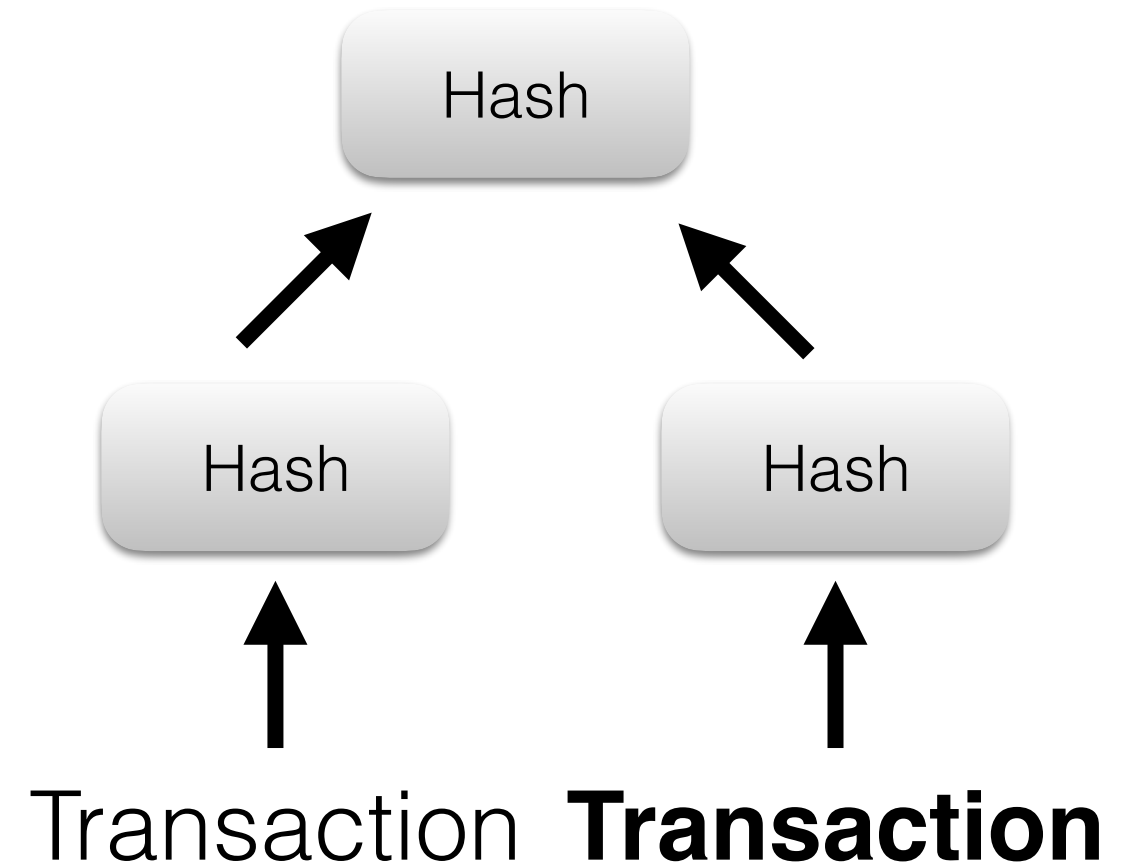
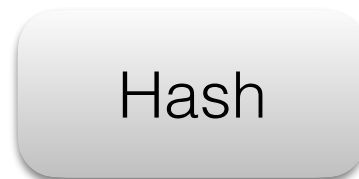


Is this transaction in the  
blockchain?

# SPV Transaction verification

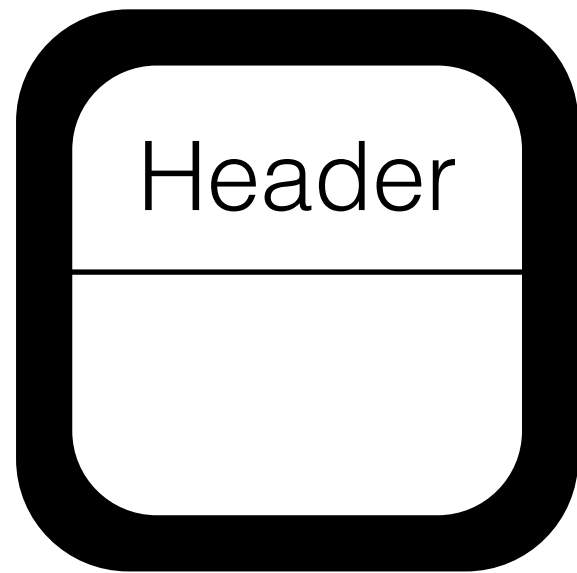


Blockchain  
with headers  
**only**

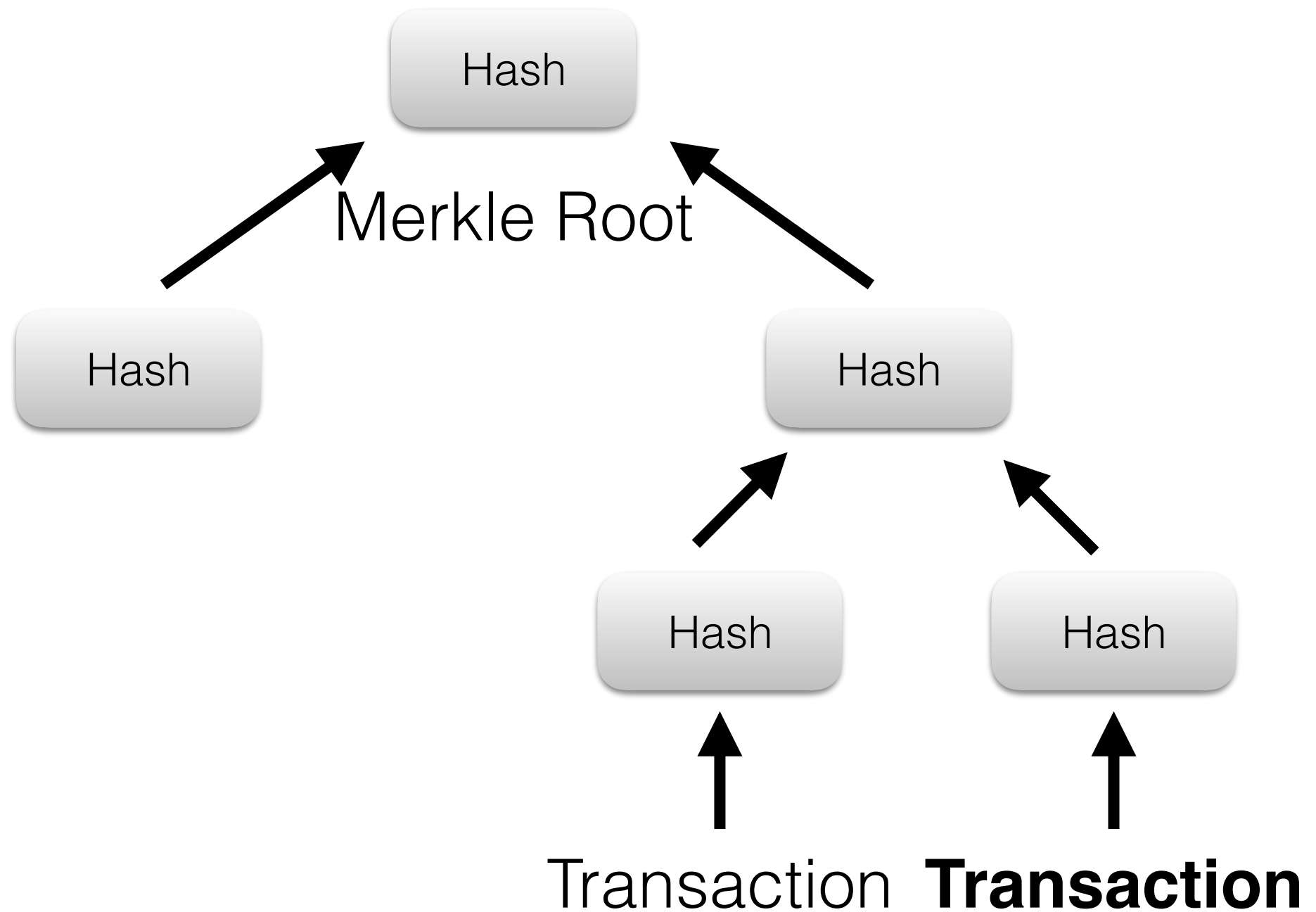


Is this transaction in the  
blockchain?

# SPV Transaction verification



Blockchain  
with headers  
**only**



Is this transaction in the  
blockchain?

## SPV Transaction verification

