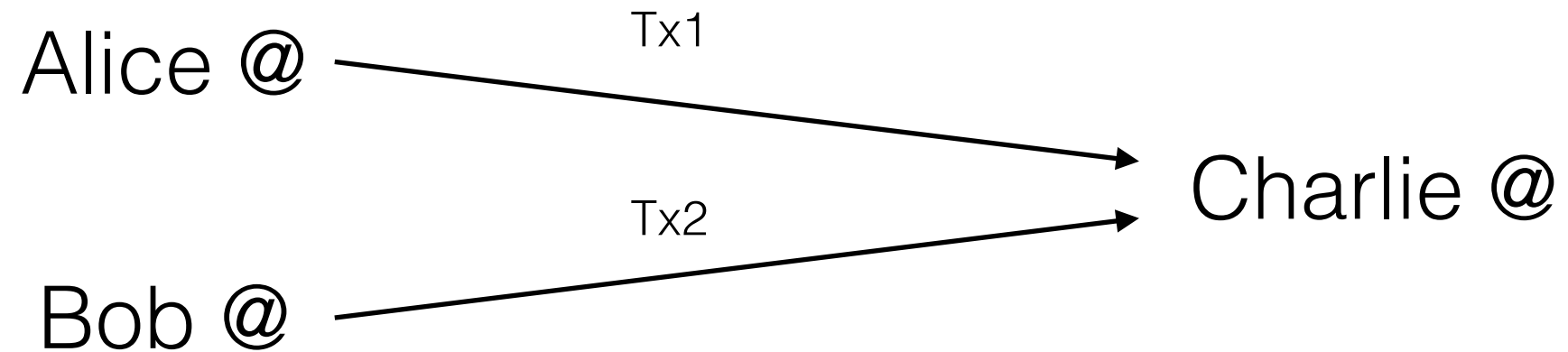
A close-up photograph of a ship's anchor and chain. The anchor is white and metallic, with a rusty chain attached. The background is a deep blue, textured surface, possibly water or a sky. The text "Blockchain Privacy" and "Privacy on the Transaction Layer" is overlaid in white.

# **Blockchain Privacy**

## **Privacy on the Transaction Layer**

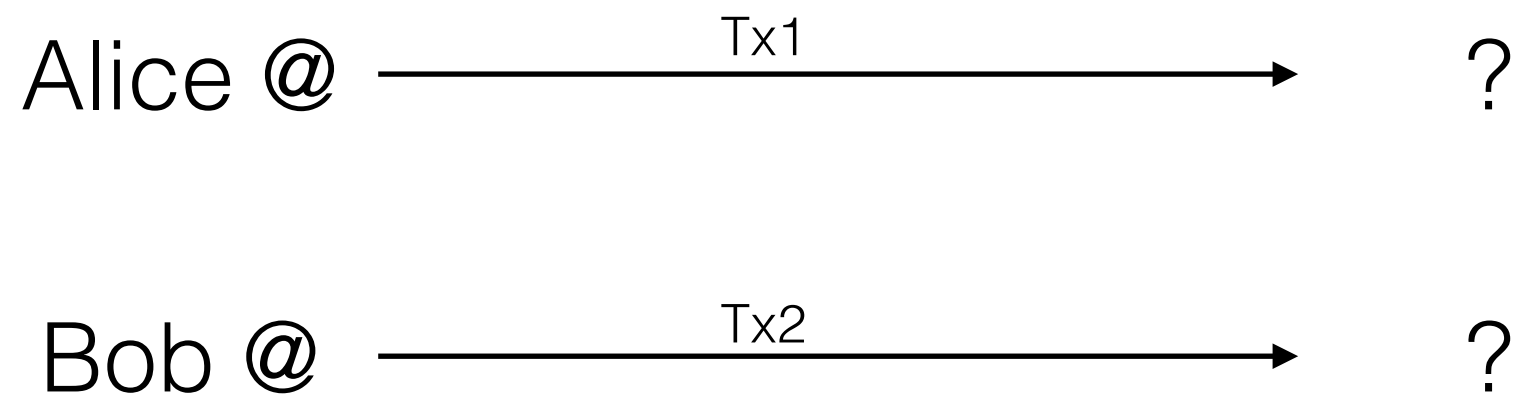


## Linkability



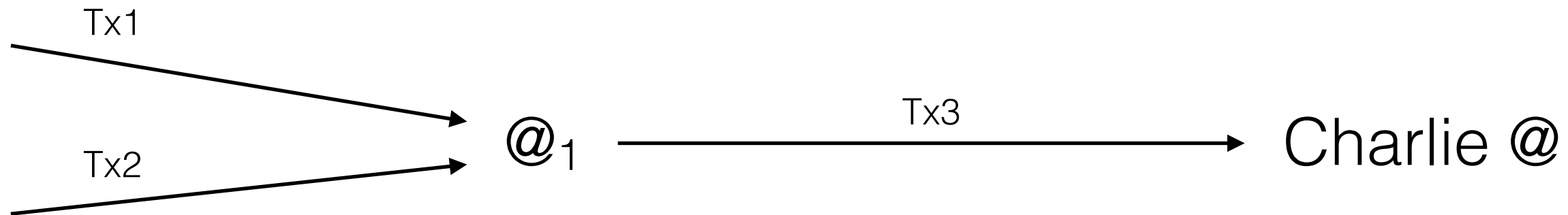
Everybody sees the transactions go to the **same** recipient.

## Unlinkability



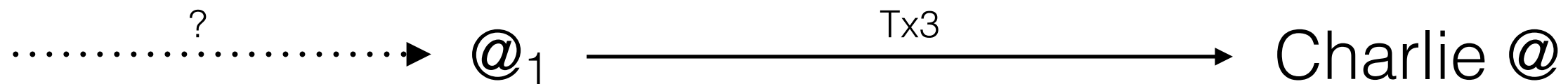
No idea where they go.

## Traceability



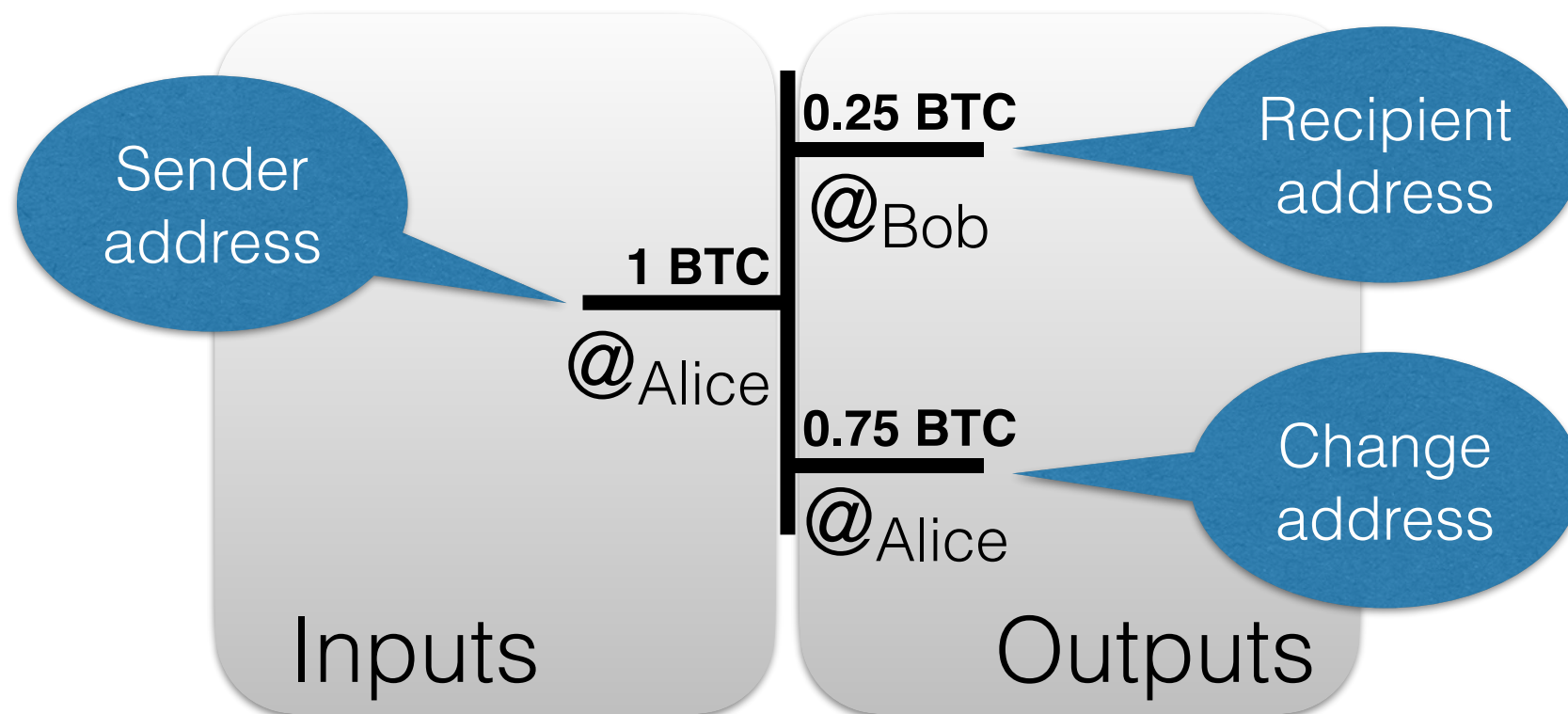
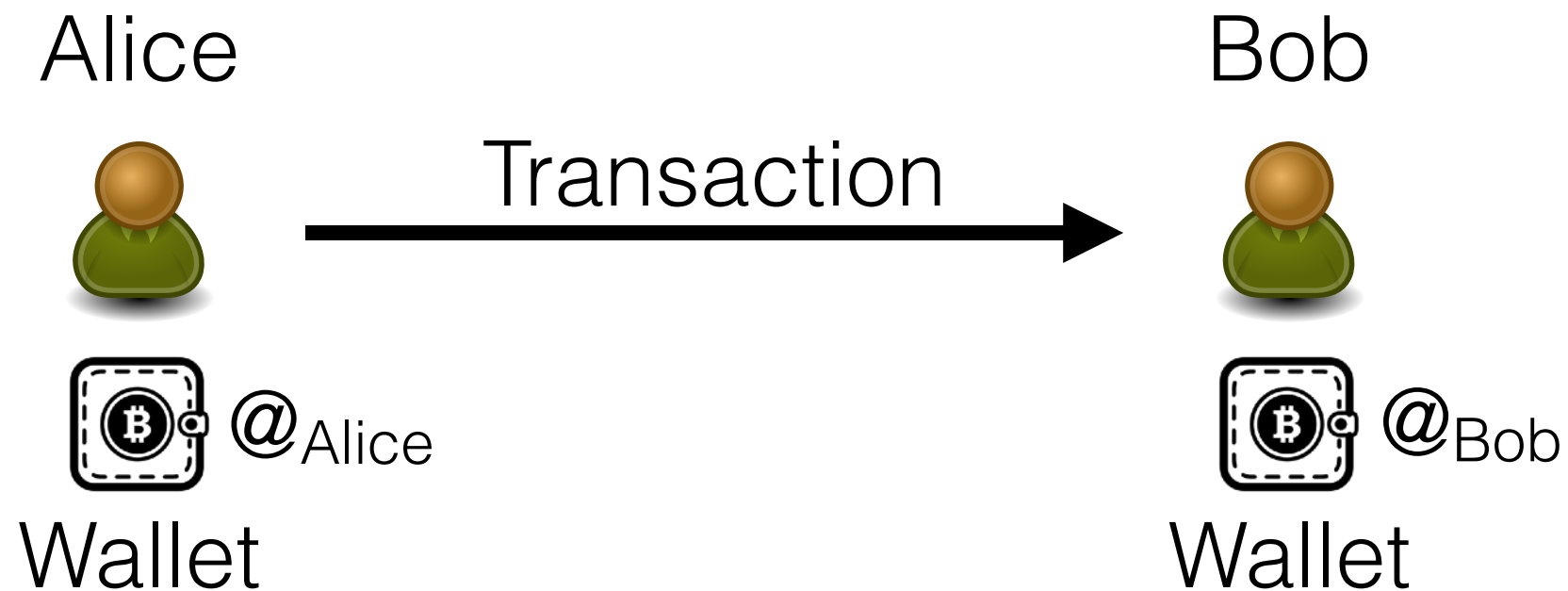
Tx3 spends funds received in Tx1 and Tx2.

## Untraceability

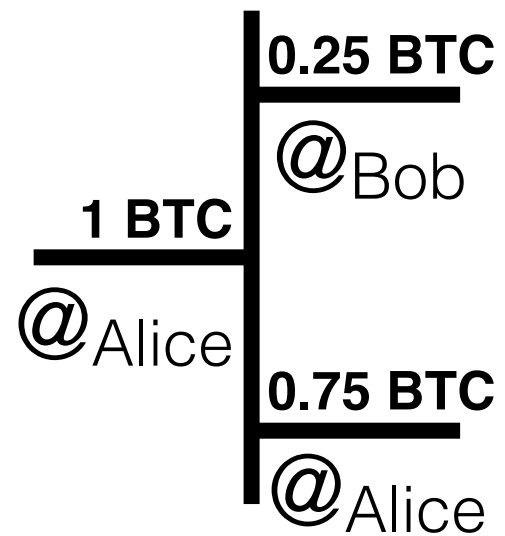


No idea where the funds from Tx3 come from.

# Transactions in Bitcoin (UTXO model)

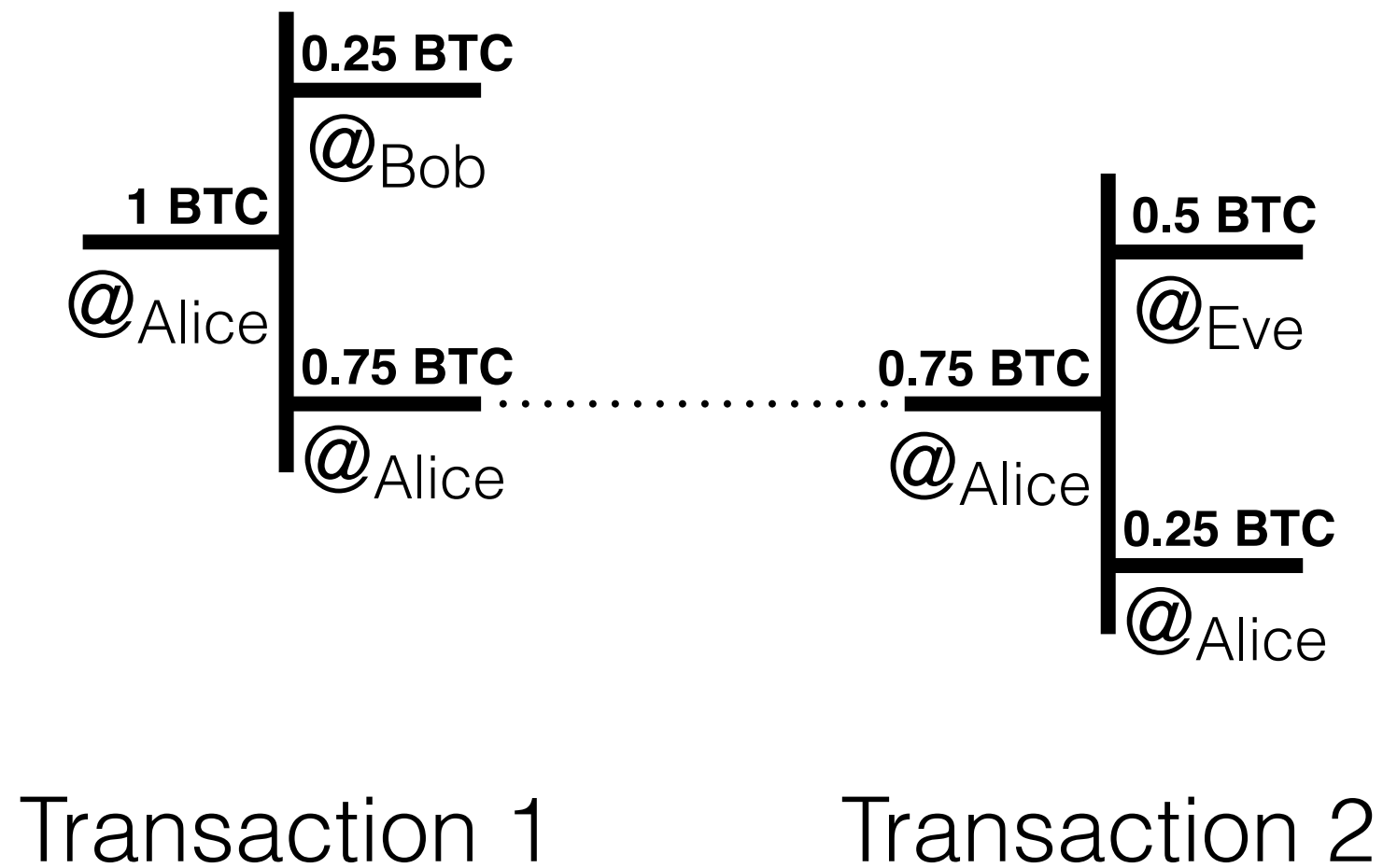


# Transactions in Bitcoin



Transaction 1

# Transactions in Bitcoin



# Heuristics to Cluster Bitcoin Addresses

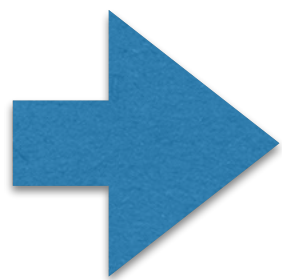
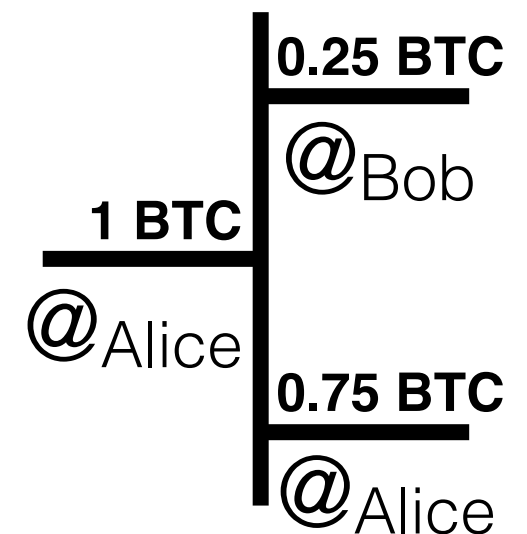


- **Change Address**

If new, then likely a change address

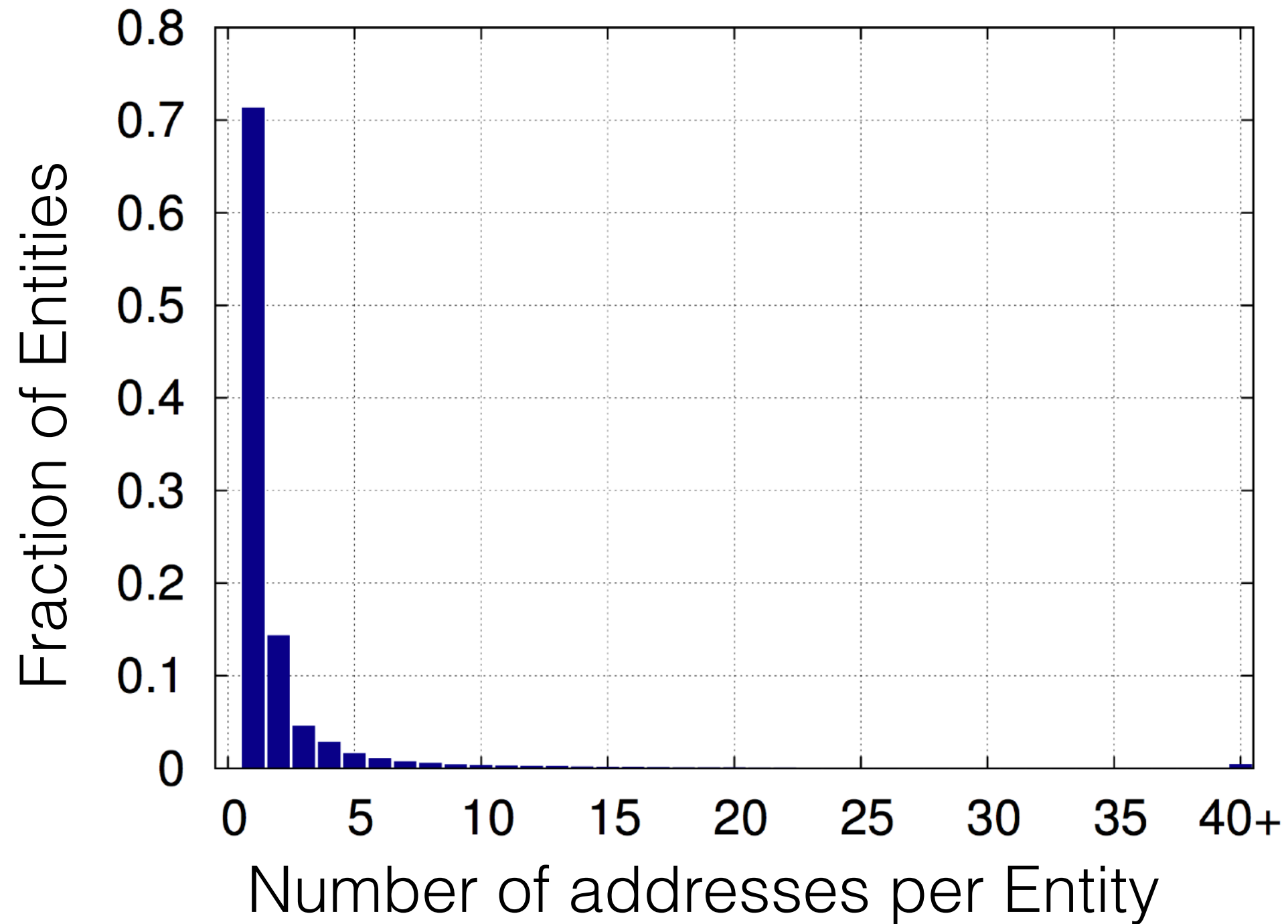
- **Multi-input Transactions**

All inputs can be signed by the same entity.



Possible to cluster  
addresses into cluster  
that might represent entities

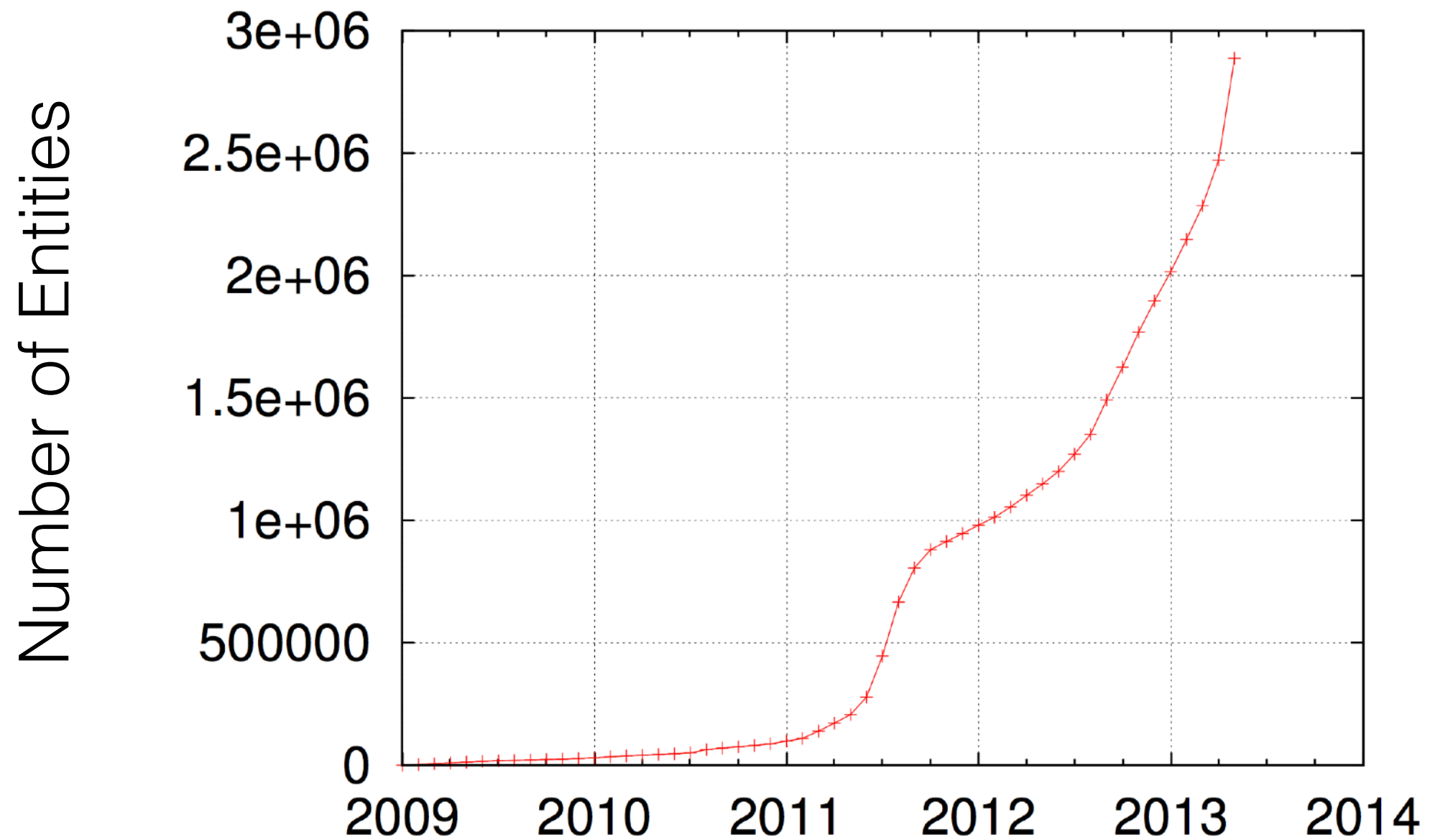
# Entity Cluster



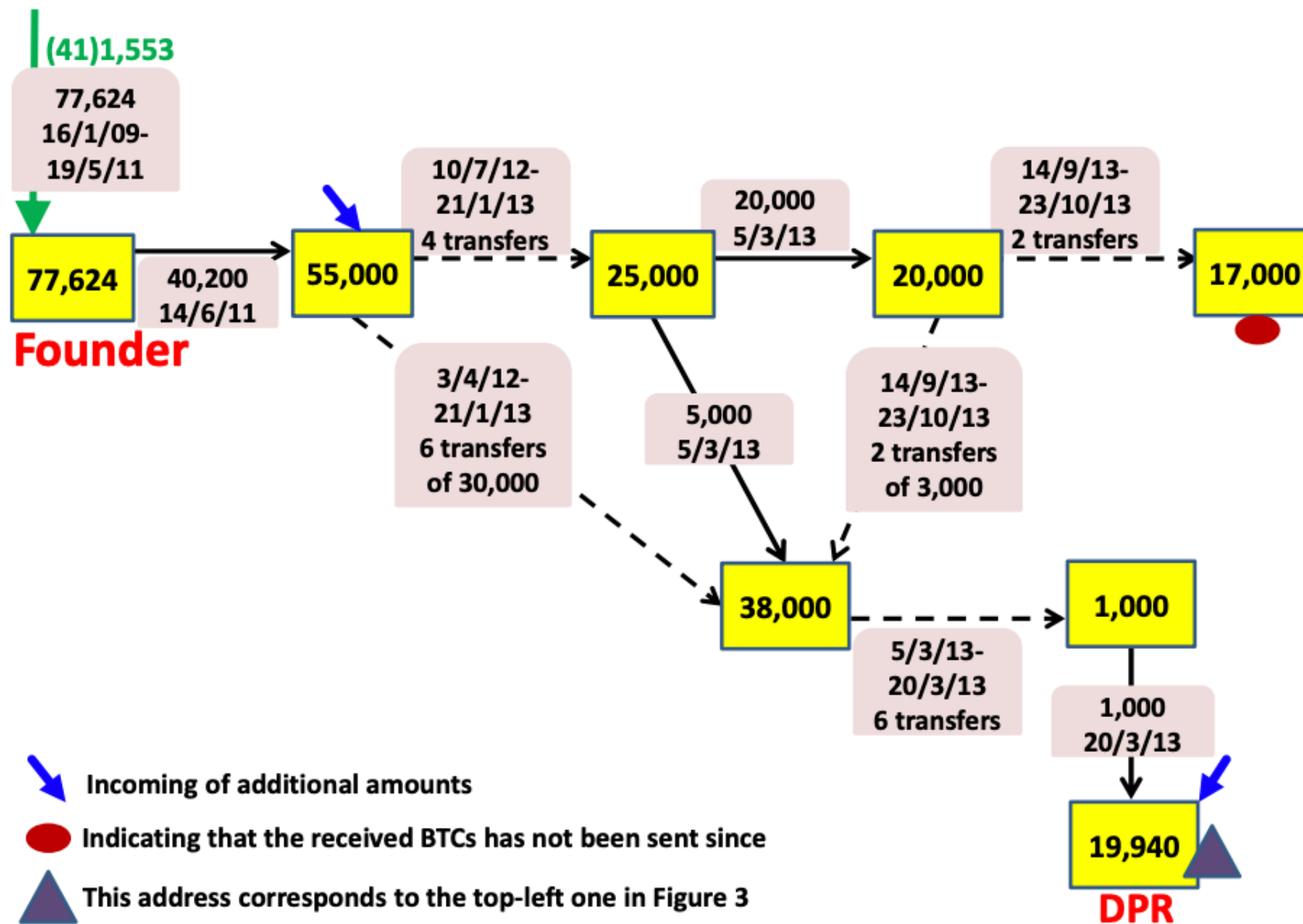
<https://github.com/znort987/blockparser>



# Entity Evolution over Time



# Easy to trace?



Published by FBI  
After seizing Silk Road server