

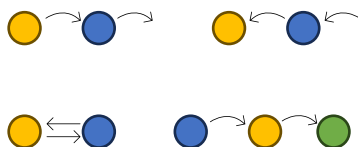
## Surprising perspective

The final matrix to overlook, what some members owe the community and what the community owes to others can be filled in various ways by pairs of members.

Either they deliver the balance of their common account sheet, or the total of both sides or even a single contract.

Single invoices may be entered in the matrix, but invoices to only pay XOR to only receive (seen from the perspective of a knot) won't save the two parties liquidity.

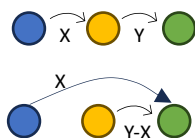
Orange will not receive more or pay less than his single invoice. (upper line)



Obviously both types are needed to make up a balance, which needs two numbers to subtract.

Orange needs incoming AND outgoing arrows (lower line) to save by netting.

But there is an interesting perspective to not saving oneself.



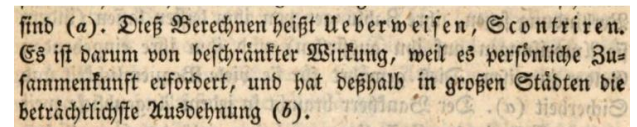
Although blue is payer only and does not save himself, he helps his creditor yellow to save liquidity when he follows his assignment to pay his debt to green.

In earlier times (trade fairs) all three had to be present to agree and to re-write their books accordingly and simultaneously. They took a week or more to test all the combinations. Everybody once was green, then blue and also orange.

They were happy to detect loops, but after clearing them by removing the smallest amount, they still

were left with ternary configurations to nett out more liquidity.

Rau<sup>1</sup> can see the potential of multilateral netting, but also mentions the limiting need of personal presence.



*"This saving of means of circulation goes much further when more than two people, who have claims on each other back and forth, settle accounts in a similar way, so that each instructs his debtors not to pay himself, but his creditors, and pays or receives only as much in cash as his total debts and claims are different from each other. This calculation is called remitting, discounting (Ueberweisen, Scontriren). It is therefore of limited effect, because it requires personal meetings, and for this reason has the most considerable extension in large cities."*<sup>2</sup>

### Modern times

Once everybody understood the mechanism, all can agree to use it, without agreeing on each single instance. Then they correct only the result of many instances, which is the result of the matrix: MATS

The clearing house in London was the room to meet. It developed into the RTGS-Systems of today, which run without requiring personal meetings.

<sup>1</sup> Rau, Karl Heinrich: Grundsätze der Volkswirtschaftslehre 1841  
<https://www.digitale-sammlungen.de/de/view/bsb10388502?page=357>

<sup>2</sup> Regulations: Nuremberg 1654, Augsburg 1680, Leipzig 1683, Frankfurt 1684, ...