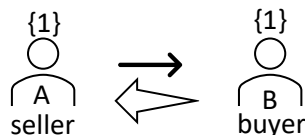
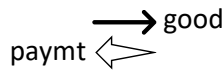


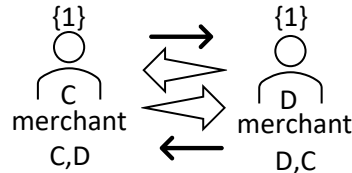
Village Obligation Clearing

The members of a community must make a “leap of consciousness” from the horizon of multiple isolated obligations $\{1\}:\{1\}$, which they are accustomed to, to the holistic view on all of them $\{1\}:\{n-1\}$. Certain “clubs” already make use of it, to their advantage¹.

There are two $\{1\}:\{1\}$ configurations



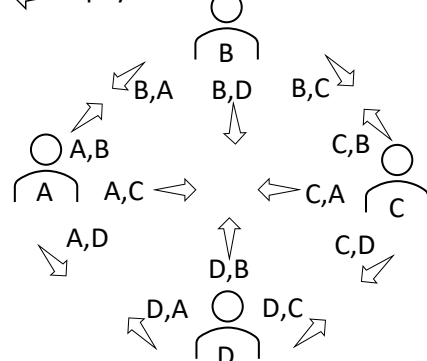
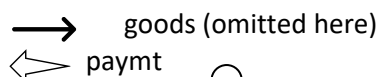
One merchant sells to a customer and writes down the open payments B,A (=B owes to A). At the end of a time period or when a limit is reached, the merchant adds it up and asks the customer to pay. By paying the sum, open items are settled.



Two merchants trade together changing goods and services and writing down the open payments C,D (=C owes to D) and D,C (D owes to C) on individual sub-lists.

At the end of a time period they compare their lists (=clearing) and after the determination of the conformity, compute the balance and either pay it or take it as a starting value for the next list. (=settling)

By the single settling action, all items on the list and the sub-lists are settled.



A community of merchants in a village trade together changing goods and services and writing down the open payments x,y ($=x$ owes to y) and y,x (y owes to x) in form of individual lists.

At the end of a time period they compare their individual lists (=clearing), and fill the totals of every list (=money due) into a matrix.

The matrix can be optimized as described.

By the settling via the village account, all items on the village-matrix and the individual lists are settled.

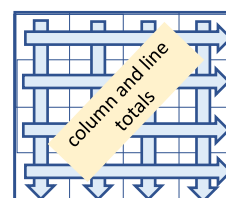
We are the village-matrix, we owe the matrix (us), the matrix (we) owes us.

	$\{1\}$ A gets	$\{1\}$ B gets	$\{1\}$ C gets	$\{1\}$ D gets
$\{1\}$ A owes		A,B	A,C	A,D
$\{1\}$ B owes	B,A		B,C	B,D
$\{1\}$ C owes	C,A	C,B		C,D
$\{1\}$ D owes	D,A	D,B	D,C	

If “C” is only a customer, he would just have values in his line, not in his column, if “A” would be just a seller, he would have no values in his line, only in his column.

Besides bilateral compensation between (x,y) and (y,x) there might be circular configurations for multilateral compensation (=scontration) or ternary configurations for delegation (“pay him, instead of me, to settle all or part of, what I owe to him”).

Calculating the totals of each row and of each column, one can see, whether moving money can be minimized.



$\{1\}:\{n-1\}$
line total
①

A owes to the matrix
B owes to the matrix
C owes to the matrix
D owes to the matrix

$\{n-1\}:\{1\}$
column total
②

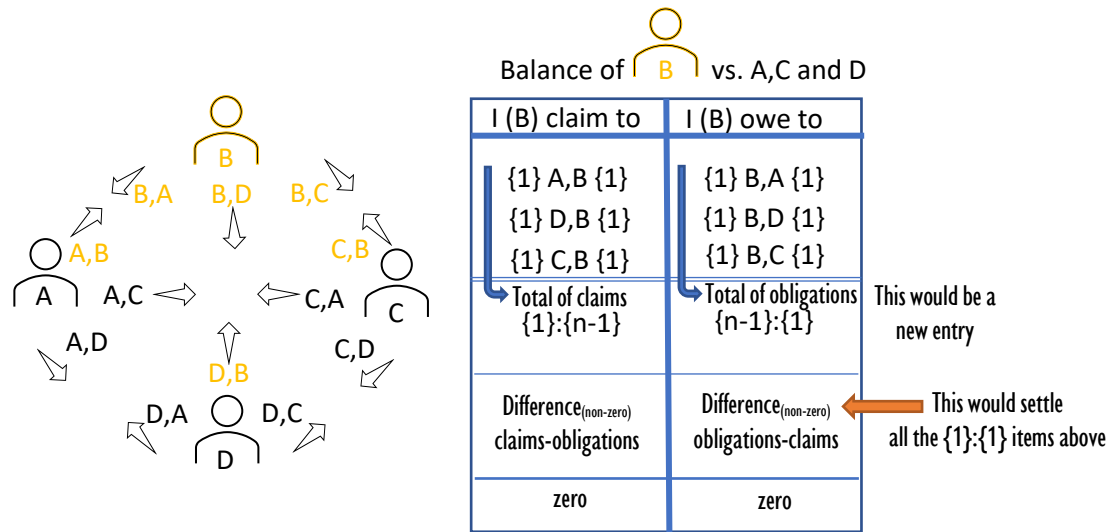
the matrix owes to A
the matrix owes to A
the matrix owes to A
the matrix owes to A

balance
① - ②
if positive to be
paid in,
if negative to be
taken from the
matrix account

Moving cash can only be minimized, if there are pairings of “x owes to the matrix” and “the matrix owes to x”, which both are non-zero.

¹ To name only two: Medieval merchants did it after the trading fairs and banks do it in their real-time-gross-settlement systems (RTGS).

Each individual balance of the actors reflects the relations. A new item can be inserted: Claims and obligations versus the other actors. This is the total of the single items in the balance, which again are totals of sub-accounts with variable length of open items.



Once this is understood by all, the rest is mere arithmetic applied to the initial matrix.

	A	B	C	D	Total					
A	-	2.238	1.405	542	4.185	A owes to matrix:	4.185	Matrix owes to A	6.988	
B	2.943	-	1.742	2.871	7.556	B owes to matrix:	7.556	Matrix owes to B	4.812	
C	3.385	668	-	2.074	6.127	C owes to matrix:	6.127	Matrix owes to C	5.515	
D	660	1.906	2.368	-	4.934	D owes to matrix:	4.934	Matrix owes to D	5.487	
Total	6.988	4.812	5.515	5.487			22.802		22.802	

	pay to	get from
the matrix	-	2.803
	2.744	-
	612	-
	-	553
	3.356	3.356

To check the result, one could follow the non-holistic way and try to come to the same result by applying bi- and multi-lateral compensation as well as delegation (in the old {1}:{1} manner) to the community matrix, which would yield this²:

	A	B	C	D	Total
A	-	-	-	-	-
B	2.191	-	-	553	2.744
C	612	-	-	-	612
D	-	-	-	-	-
Total	2.803	-	-	553	-

Payments from B to A and D, and C to A would settle the complete paying load of 22.802 with 15%. But two paying to two others – *how can that compensate what D owes to B?* This question shows, that the individual {1}:{1} perspectives must be completely abandoned in favor of the holistic view.

To really, really understand and accept this, is the hardest part - math is the easiest.

Conditions to enjoy the primary and secondary benefits of the procedure:

- a living community whose members aware that it is a community and what the purpose/mission of their community is.
- agreement on the primary purpose of the village clearing: to save cash by compensation and delegation. (not: to provide mutual credit!)
- agreement on those goods and services that can be settled by the community matrix. (In contrast to goods or services that are bought or sold for purely private interest.)

Mutual credit is no objective of the procedure, but the need for mutual credit is - as a secondary benefit – reduced, because the individual paying-load is reduced.

² Result of the program TERMITE