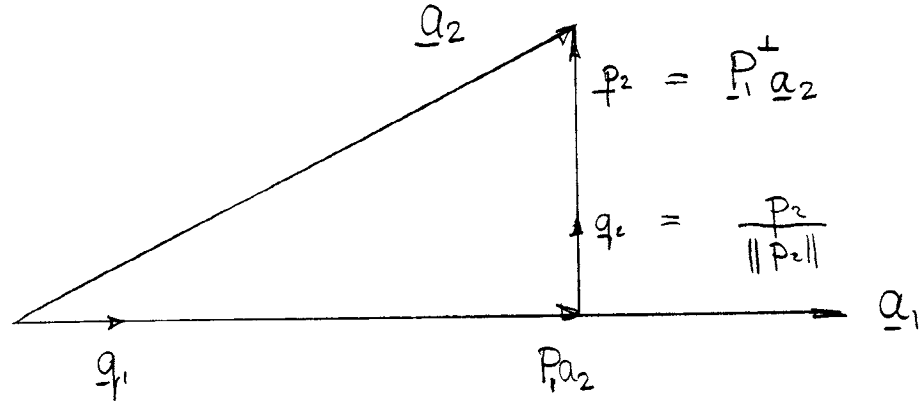
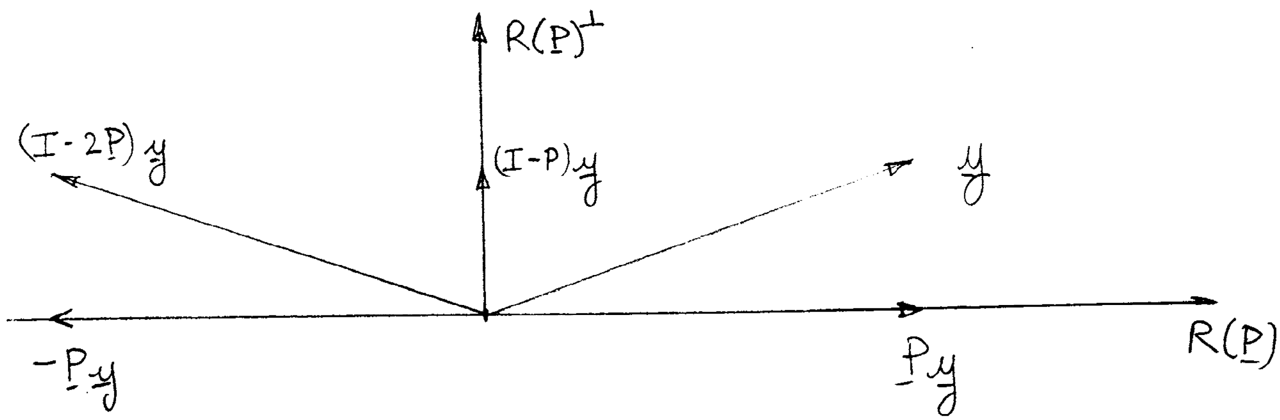
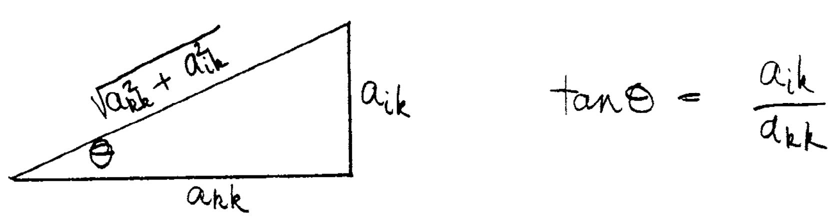


<u>Fig. 1.</u> A diagram showing how q_1 and q_2 are constructed from $\underline{a}_1$ & $\underline{a}_2$ using classical GS.



<u>Fig 2</u> Details of how the matrix $\underline{I}-2\underline{P}$ reflects y in $R(\underline{P})^{\perp}$.



<u>Fig. 3.</u> Construction of c & s for Givens rotations.

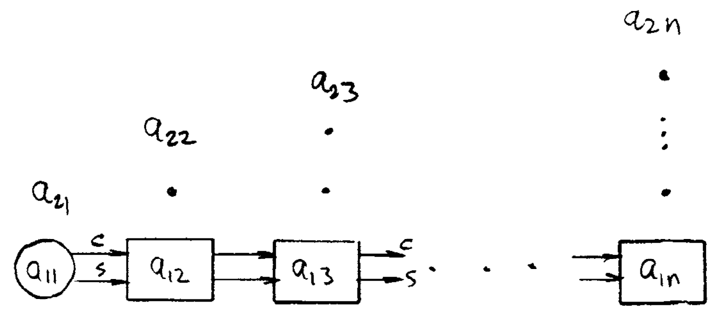
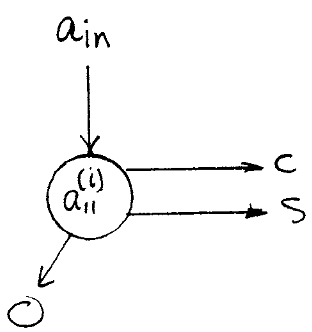


Fig. 4 First stage of the GK systolic array. This array eliminates element a_{21} by effectively multiplying by the matrix $\underline{J}(2,1)$ as shown pg. 13. Each cell is driven by a common clock which is not shown.

Circular boundary cell.



$$t = \frac{a_{11}^{(i)}}{a_{in}}$$

$$c = (1+t^2)^{-1/2}$$

$$s = ct$$

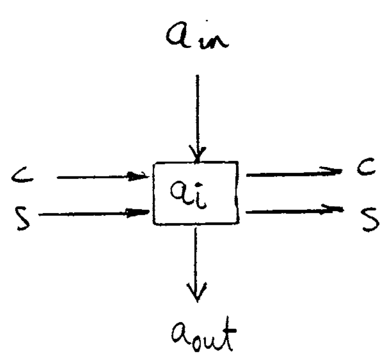
or equivalent. see: algorithm pg. 11

$$a_{11}^{(i+1)} \leftarrow c a_{11}^{(i)} + s a_{in}$$

$$i \leftarrow i+1$$

i is temporal index

Internal square cell.



$$a^{(i+1)} = c a^{(i)} + s a_{in}$$

$$a_{out} = -s a^{(i)} + c a_{in}$$

Fig. 5 Each clock pulse, the circular and square cells perform the operations shown.

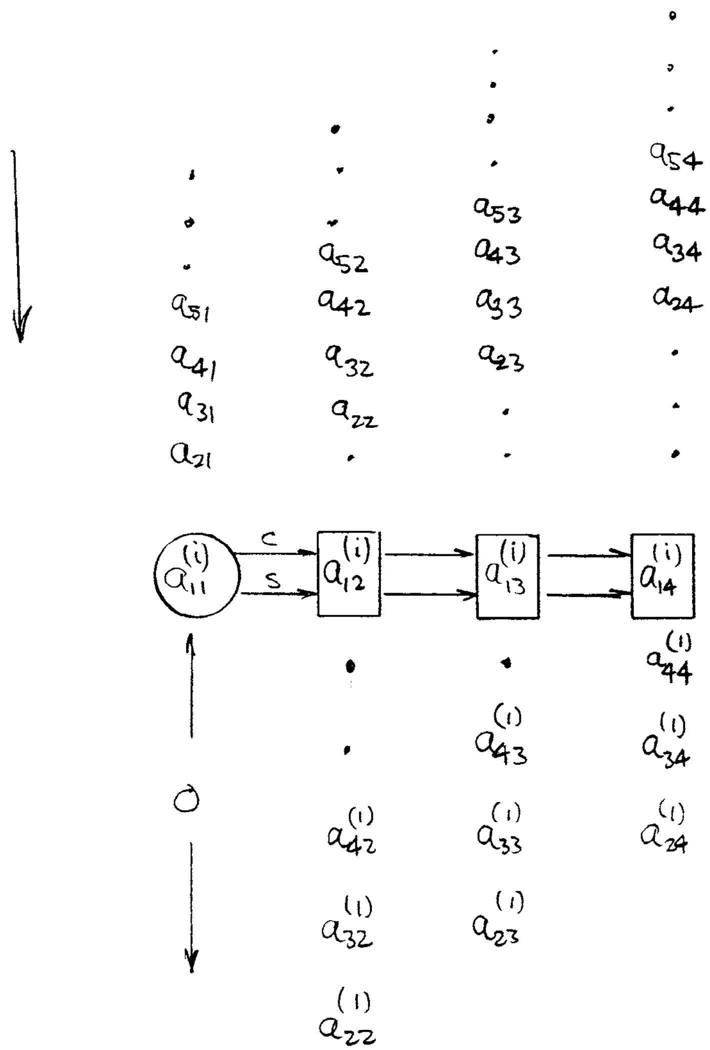


Fig. 6. Extension of Fig. 4 so that the entire first column of $\underline{A}$ is eliminated.

n=5.

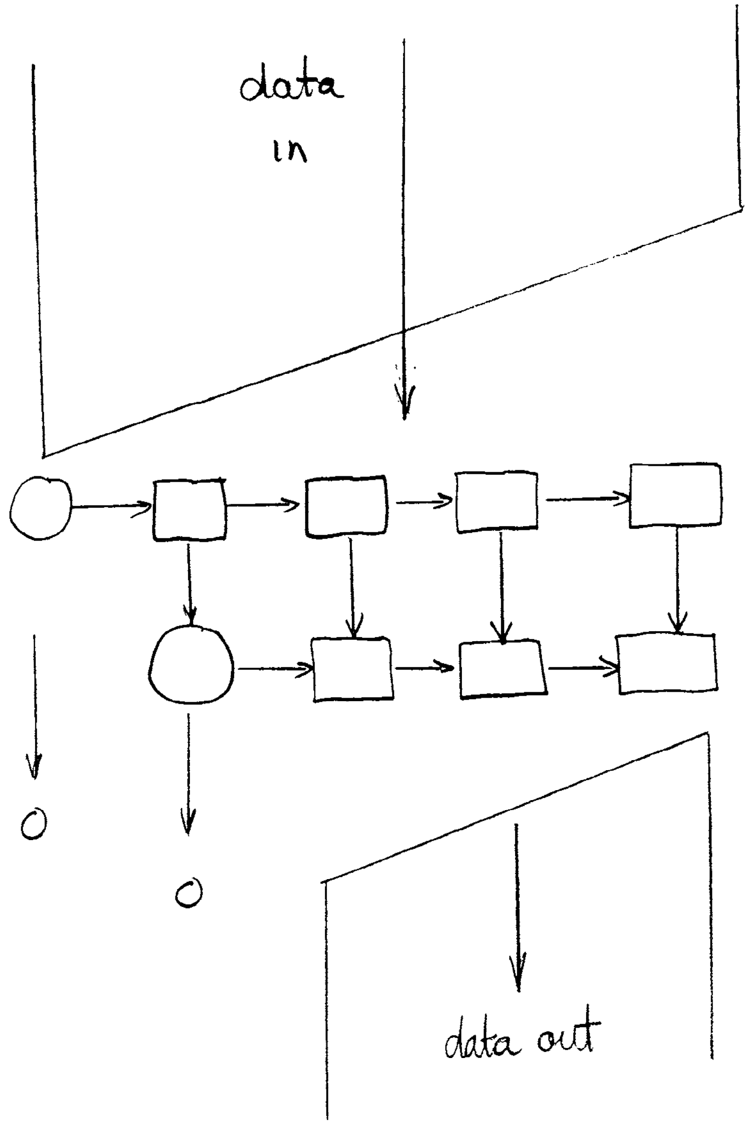


Fig. 7a. Extension of the linear systolic array so that first two columns of $\underline{A}$ are annihilated.

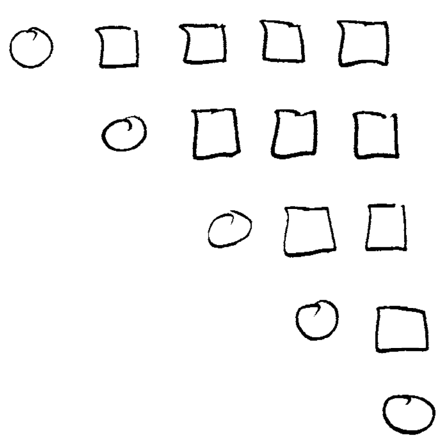


Fig. 7b. Systolic array for the complete triangularyzation of $\underline{A}$. The data remaining in the cells comprize the matrix $\underline{R}$.

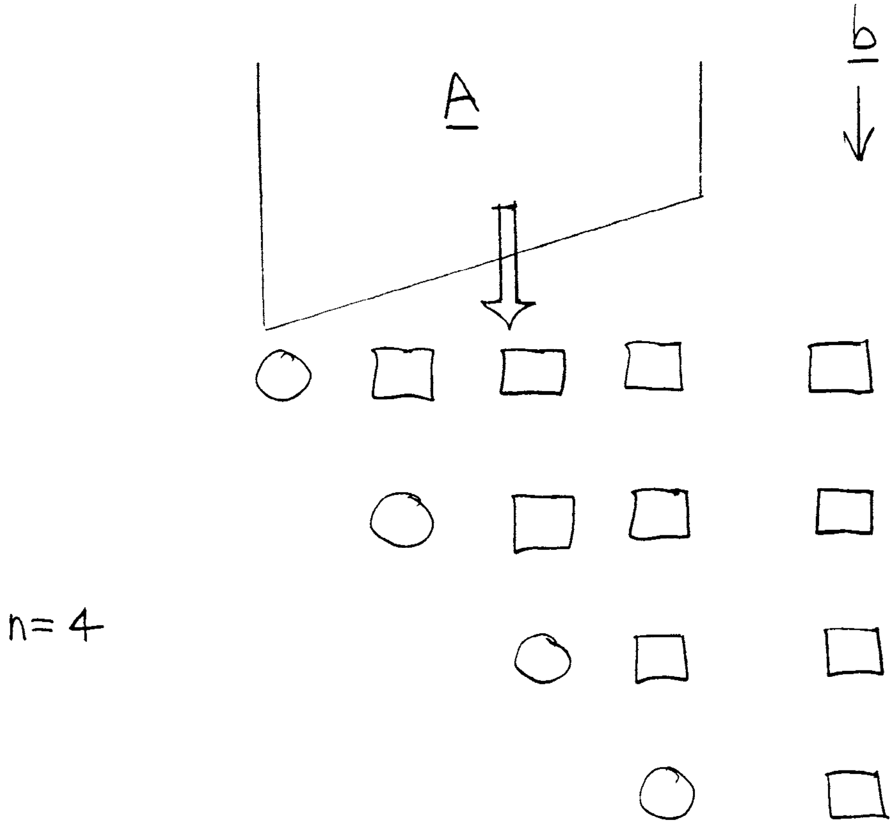


Fig. 8. The addition of a new column. The data in the last column gives the term $\underline{Q}^T \underline{b}$ required to solve eq.(23).