note. what about an eigenvector centric version of dwd. not avoiding dets at all costs, but instead providing double interpretations. it could be playfully called 'up with eigenvectors' in hefferon's book eigenvalue is considered more central. from an intuit point of view the directions seem not less important, despite their variance with basis.

note. we could also include our idea of first separating dets from alg, and not using the unmotivated (albeit enlightening) aprroach of hefferon.
the idea is to look at determinants themselves and derive their properties and then linking them to singularity using the invariance under lin combs. treating the sign changes, etc... as mere properties and not as unmotiv. generalizations of the 2x2 case. this also removes the need of havung to define det of ident to be one. such a definition is easily agreed on but nevertheless remains subtly mystical.

remember the golem.

note. in dwd, proof of theorem 2.1. I notice something i had previously missed. an additional subtely when relating 'polynomial matrix' equations to normal ones. i already knew that opportunities arise whe comparing algebra to matrix algebra, but i spotted new details. any polynomial 'makes sense' and is factorable. but when it comes to matrix polys, looking at the proof, this is only sometimes possible. if we were in M2x2 and had T2 v + T v, with T and T2 lin indep, which is possible in M2x2, then equating this to zero (a vector) does not make sense. but x2+x=0 always does. for matricesnit only makes sense when the T power matrices are indep. this is quite an interesting (even if not surprising) difference.
looking for more differences purely on the side of appearances, we note the 'extra v' in 3 T2 v + 5 T v = 0, compared to 3 x2 + 5x = 0.
correction. the above is wrong, it is the vectors T^i v that are lin dep in V of dim. n. that the T^is are dep. in Mixi is also true but does not signifi anything wrp to eigenvalues. the general idea of the note can still be rescued.

note. the proof from above also directky proves the existence of generalized eigenvectors. this is what we wanted... or is this wrong and it simply proves the existence of an eigenvector? what about factor multiplicity?
note. are the (T-lambda I) factors commutative?? it seems they have to be, does this not lead to a short proof by induction for the kernels of the factors being lin indep and thus forming a basis??? todo!! check this! for this first refine the re. between a normal poly fac. (e.g completing the square?) 'common algebra'?

note. another merit of no det. appro is bringing out the generalized eigenvec. compared to hiding them.