1. (a) [7 pts.] If associative memory $M$ is made from one cue $u$ and two targets $v_1$ and $v_2$:

$$M = \begin{bmatrix}
0.0 & 0.80 & 0.60 \\
0.0 & 0.58 & 0.0 & 0.58 & 0.0 & 0.58 \\
0.0 & 0.0 & 0.80
\end{bmatrix}$$

what is the result of cueing $M$ with $u$? (HINT: You don’t need to calculate the matrix!)

(b) [3 pts.] Describe the result in terms of $v_1$ and $v_2$. 

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2. (a) [7 pts.] If associative memory $M$ is made from cues $u_1$ and $u_2$ and targets $v_1$ and $v_2$:

$$M = \begin{pmatrix}
0 & .80 & .60 & 0 & 0 & 0 \\
0 & .0 & .0 & .0 & .0 & .0 \\
0 & .0 & .0 & .0 & .0 & .0 \\
0 & .0 & .0 & .0 & .0 & .0 \\
0 & .0 & .0 & .0 & .0 & .0 \\
0 & .0 & .0 & .0 & .0 & .0 \\
\end{pmatrix}$$

what results from cueing $M$ with a mixture of $0.3u_1 + 0.7u_2$? (You needn’t calculate the matrix!)

(b) [3 pts.] Describe the result in terms of $v_1$ and $v_2$. 
3. [10 pts.] If a filter $F$ is made from auto-associated vectors $v_1$ and $v_3$ (NOTE variable names!):

$$F = v_1 (\text{colonel}) = \begin{bmatrix} .0 \\ .80 \\ .60 \\ .0 \\ .0 \end{bmatrix} + v_3 (\text{son}) = \begin{bmatrix} .58 \\ .0 \\ .0 \\ .58 \\ .58 \end{bmatrix}$$

what is the result of cueing $F$ with a mixture of $.2v_1 + .8v_2$? (You needn’t calculate the matrix!)

4. [10 pts.] Consider the example sentences mentioned in the Levy 2008 reading (p. 1153):

(a) The daughter of the colonel who shot himself on the balcony had been very sad. (slow)
(b) The son of the colonel who shot himself on the balcony had been very sad. (fast)

Why might the ambiguity propagation and resolution implemented in the above memory model predict the last sentence to be read faster than the first?