**Fall Semester, 2005** **B.Y. Choueiry**

**CSCE 421/821: Foundations of Constraint Processing**

# On the Projection of Non-Binary Constraints

Given the three variables $X_1$, $X_2$, and $X_3$, each with the domain $\{a, b, c\}$, and the ternary relation $R_{X_1,X_2,X_3} = \{(a, b, c), (c, b, a), (a, c, a)\}$ of allowed tuples.

1. Compute $R_{X_1,X_2} = \pi_{X_1,X_2} R_{X_1,X_2,X_3}$.
2. Compute $R_{X_1,X_3} = \pi_{X_1,X_3} R_{X_1,X_2,X_3}$.
3. Compute $R_{X_2,X_3} = \pi_{X_2,X_3} R_{X_1,X_2,X_3}$.
4. Compute $R'_{X_1,X_2,X_3} = R_{X_1,X_2} \bowtie R_{X_1,X_3} \bowtie R_{X_2,X_3}$.
5. Compare $R_{X_1,X_2,X_3}$ and $R'_{X_1,X_2,X_3}$.
6. Can you draw any conclusions on the projection technique?