

Local Navigation

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Woodworking example:

- Objects: {Table, Chair, Cabinet, Bowl}
- Attributes: {Jointing, Carving, Turning, Chiseling}
- Conditions: {Maple, Walnut, Pine, Oak}

arving

| x Oak | x Jointing | x Chiseling | x Carving | x Turning | Add attribute |
|---------------|------------|-------------|-----------|-----------|---------------|
| x Table | X | X | | | |
| x Chair | X | X | | | |
| x Cabinet | X | | X | | |
| x Bowl | | | | | |
| Add object... | | | | | |

| x Maple | x Jointing | x Chiseling | x Carving | x Turning | Add attribute |
|---------------|------------|-------------|-----------|-----------|---------------|
| x Table | X | | X | | |
| x Chair | X | | | X | |
| x Cabinet | | | | | |
| x Bowl | | X | | X | |
| Add object... | | | | | |

| x Pine | x Jointing | x Chiseling | x Carving | x Turning | Add attribute |
|---------------|------------|-------------|-----------|-----------|---------------|
| x Table | | | | | |
| x Chair | | | | | |
| x Cabinet | X | X | | | |
| x Bowl | | | | | |
| Add object... | | | | | |

| x Walnut | x Jointing | x Chiseling | x Carving | x Turning | Add attribute |
|---------------|------------|-------------|-----------|-----------|---------------|
| x Table | | | X | | |
| x Chair | | | X | | |
| x Cabinet | | | | | |
| x Bowl | | | X | X | |
| Add object... | | | | | |

Figure 1: Woodworking Triadic Context

| | | |
|-------------|-------------------------------|------------------------------------|
| Objects: | <input type="checkbox"/> Lock | Bowl |
| Attributes: | <input type="checkbox"/> Lock | Carving Turning |
| Conditions: | <input type="checkbox"/> Lock | Walnut |
| Objects: | <input type="checkbox"/> Lock | Bowl |
| Attributes: | <input type="checkbox"/> Lock | Turning |
| Conditions: | <input type="checkbox"/> Lock | Maple Walnut |
| Objects: | <input type="checkbox"/> Lock | Chair Bowl |
| Attributes: | <input type="checkbox"/> Lock | Turning |
| Conditions: | <input type="checkbox"/> Lock | Maple |
| Objects: | <input type="checkbox"/> Lock | Bowl |
| Attributes: | <input type="checkbox"/> Lock | Chiseling Turning |
| Conditions: | <input type="checkbox"/> Lock | Maple |
| Objects: | <input type="checkbox"/> Lock | Table Chair Cabinet Bowl |
| Attributes: | <input type="checkbox"/> Lock | Jointing Chiseling Carving Turning |
| Conditions: | <input type="checkbox"/> Lock | |
| Objects: | <input type="checkbox"/> Lock | Table Chair Bowl |
| Attributes: | <input type="checkbox"/> Lock | Carving |
| Conditions: | <input type="checkbox"/> Lock | Walnut |
| Objects: | <input type="checkbox"/> Lock | Table Chair Cabinet Bowl |
| Attributes: | <input type="checkbox"/> Lock | |
| Conditions: | <input type="checkbox"/> Lock | Oak Maple Pine Walnut |
| Objects: | <input type="checkbox"/> Lock | Cabinet |
| Attributes: | <input type="checkbox"/> Lock | Jointing Chiseling |
| Conditions: | <input type="checkbox"/> Lock | Pine |
| Objects: | <input type="checkbox"/> Lock | Cabinet |
| Attributes: | <input type="checkbox"/> Lock | Jointing Carving |
| Conditions: | <input type="checkbox"/> Lock | Oak |
| Objects: | <input type="checkbox"/> Lock | Cabinet |
| Attributes: | <input type="checkbox"/> Lock | Jointing |
| Conditions: | <input type="checkbox"/> Lock | Oak Pine |
| Objects: | <input type="checkbox"/> Lock | Table Chair Cabinet |
| Attributes: | <input type="checkbox"/> Lock | Jointing |
| Conditions: | <input type="checkbox"/> Lock | Oak |
| Objects: | <input type="checkbox"/> Lock | Chair |
| Attributes: | <input type="checkbox"/> Lock | Jointing Turning |
| Conditions: | <input type="checkbox"/> Lock | Maple |
| Objects: | <input type="checkbox"/> Lock | Table Chair |
| Attributes: | <input type="checkbox"/> Lock | Jointing Chiseling |
| Conditions: | <input type="checkbox"/> Lock | Oak |
| Objects: | <input type="checkbox"/> Lock | Table Chair |
| Attributes: | <input type="checkbox"/> Lock | Jointing |
| Conditions: | <input type="checkbox"/> Lock | Oak Maple |
| Objects: | <input type="checkbox"/> Lock | Table |
| Attributes: | <input type="checkbox"/> Lock | Jointing Carving |
| Conditions: | <input type="checkbox"/> Lock | Maple |
| Objects: | <input type="checkbox"/> Lock | Table |
| Attributes: | <input type="checkbox"/> Lock | Carving |
| Conditions: | <input type="checkbox"/> Lock | Maple Walnut |
| Objects: | <input type="checkbox"/> Lock | |
| Attributes: | <input type="checkbox"/> Lock | Jointing Chiseling Carving Turning |
| Conditions: | <input type="checkbox"/> Lock | Oak Maple Pine Walnut |

Figure 2: Woodworking Triadic Concepts

Starting triconcept: (Bowl, {Carving, Turning}, Walnut), along the condition dimension: Walnut

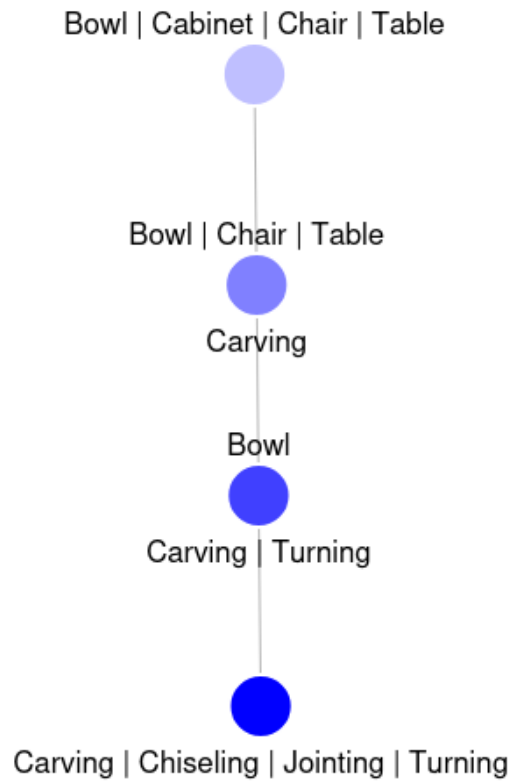


Figure 3: Starting cluster, along condition dimension

Navigation Step 1: Selecting the (Bowl, {Carving, Turning}) concept, locking the object dimension

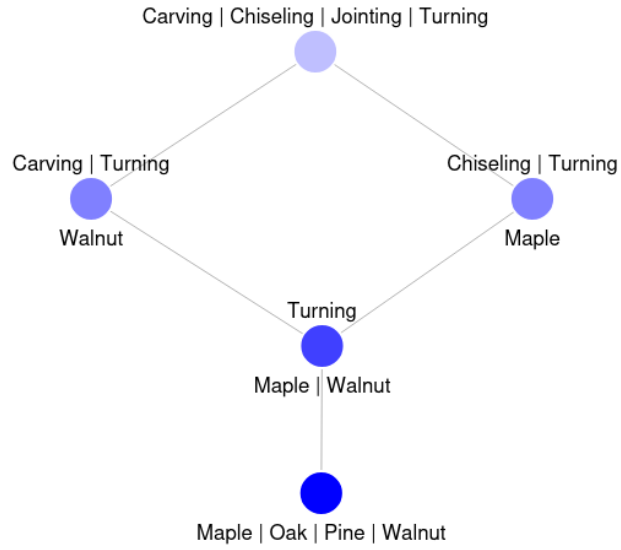


Figure 4: Second cluster, from (Bowl, {Carving, Turning}) concept, along object dimension

Navigation Step 2: Selecting the ({Carving, Turning}, Walnut) concept, locking the attribute dimension, Carving

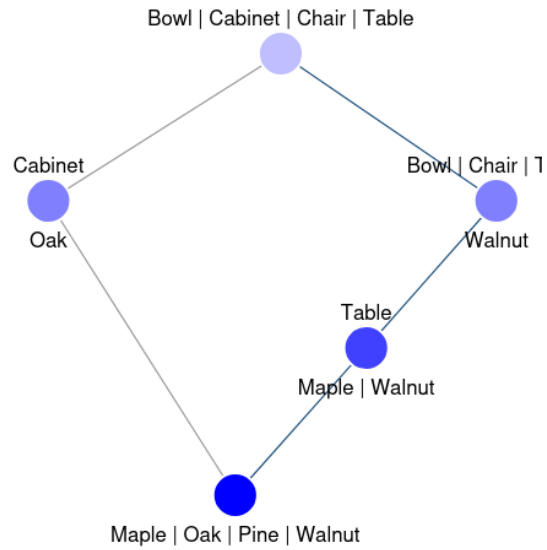


Figure 5: Third cluster, from ({Carving, Turning}, Walnut) concept, along attribute dimension

Navigation Step 3: Selecting the (Table, {Maple, Walnut}) concept, locking the condition dimension, Maple

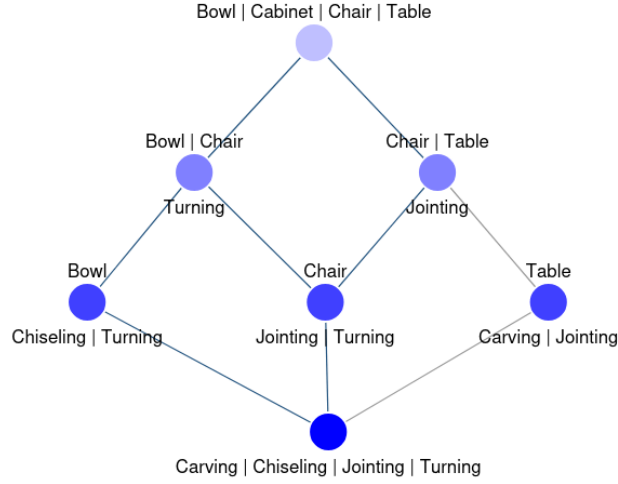


Figure 6: Fourth cluster, from (Table, {Maple, Walnut}) concept, along condition dimension

Navigation Step 4: Selecting the (Chair, {Jointing, Turning}) concept, locking the object dimension, Chair

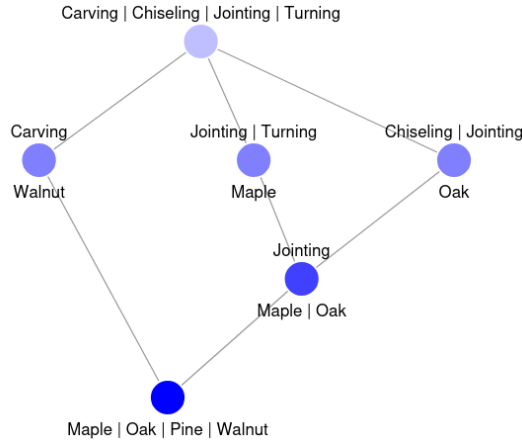


Figure 7: Fifth cluster, from (Chair, {Jointing, Turning}) concept, along object dimension

Navigation Step 5: Selecting the (Jointing, {Maple, Oak}) concept, locking the attribute dimension, Oak

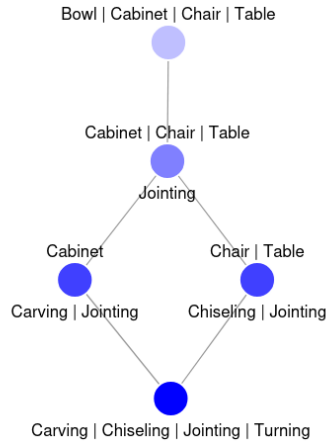


Figure 8: Sixth cluster, from (Jointing, {Maple, Oak}) concept, along attribute dimension

This represents the second cluster from Fig 4, let's try using the other attribute, Maple

Navigation Step 5: Selecting the (Jointing, {Maple, Oak}) concept, locking the attribute dimension, Maple

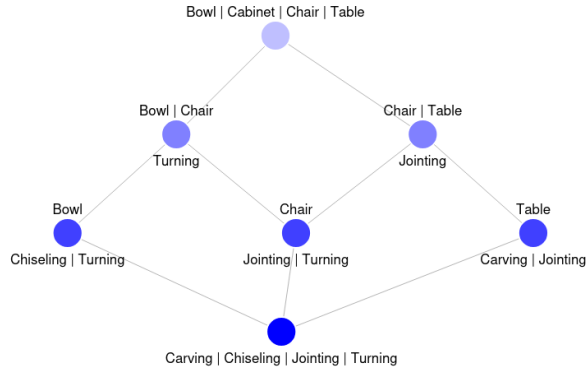


Figure 9: Sixth cluster, from (Jointing, {Maple, Oak}) concept, along attribute dimension

This represents the fourth cluster from Fig 6, let's try using the other attribute, Maple

Conclusion

Found 5 clusters in approachability graph, starting with (Bowl, {Carving, Turning}, Walnut) concept, along the Walnut condition dimension