Unateness Continued...

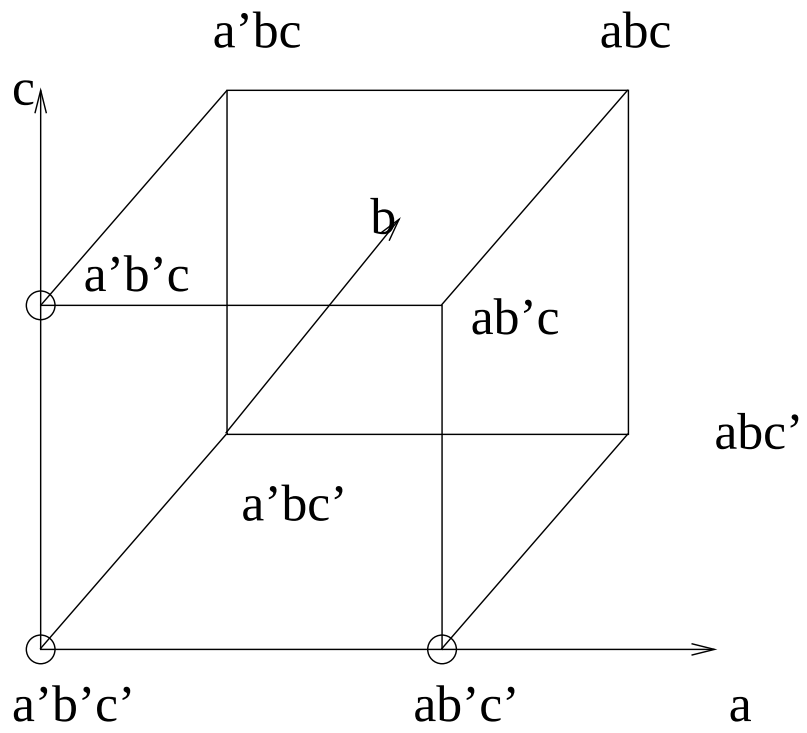
- If $f_a \supseteq f_{a'}$ then
  - Shannon's expansion: $f = af_a + f_{a'}$
  - What if $f_a \subseteq f_{a'}$?
- $f = a \oplus b \oplus c$
- $f_a =$
- $f_{a'} =$
- f is NOT unate in any variable = binate!

Binate Functions

- $f = a'b'c + a'bc' + abc$ and $g = abc + a'b'c'$
- Are f and g unate in any variable?
- $f \cdot g = af_a g_a + a' f_{a'} g_{a'}$
- $f_a =$ $f_{a'} =$
- $g_a =$ $g_{a'} =$
- Is f_a +ve unate in b? $(f_{ab} \supseteq f_{ab'})$?
- Is g_a +ve unate in b? $(g_{ab} \supseteq g_{ab'})$

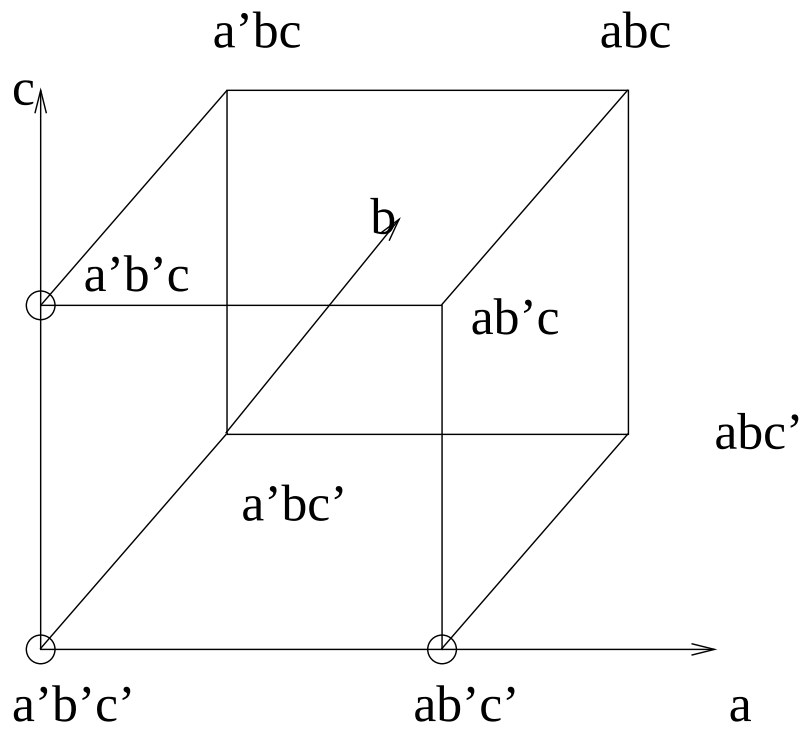
Boolean Function Operations: Boolean Difference

- Computed as $f_x \oplus f_{x'}$
- If $f_x \oplus f_{x'} = 0$, then $f_x = f_{x'}$
- When is $f_x = f_{x'}$?
- $f = ab + a'b$
- $f = ab + ac + bc$, $f_a \oplus f_{a'} = b'c + bc'$
- As a changes, f changes if $b'c + bc' = \text{TRUE}$


a’bc
abc
c
b
a’b’c
ab’c
abc’
a’bc’
a’b’c’
ab’c’
a

Consensus and Smoothing

- Consensus: $f_x \cdot f_{x'}$
- Represents the component in f independent of x
- $f = ab + bc + ac$, consensus w.r.t. $a =$
- Smoothing: $f_x + f_{x'}$
- Makes the function independent of that variable


a’bc
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a’bc’
a’b’c’
ab’c’
a