NONSYMBOLIC LOGIC XVII

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The following are proof families of representations

Boolean Cubes
Circuit Schematics

Parens
Enclosing Circles
Distinction Networks
Distinction Steps
Distinction Rooms
Distinction Blocks
Bar Graphs
Distinction Paths

Frege Diagrams (not included)
Crossbound Graphs (not included)

AXIOMATIC EQUIVALENCE

The various sets of axioms are all equivalent in that they all express what we have been calling primary logic. We have selected the parens form using the computational axioms of boundary logic to demonstrate a common basis of them all. Below, the *modus ponens* theorem (axiom) of conventional logic is proved using each of the spatial representations. We assume that only their computational axioms will be used.

AXIOMS

OCCLUSION	(( ) A) = <void>
PERVASION	A (A B) = A (B)
INVOLUTION	((A)) = A

PROOF OF MODUS PONENS

(((a) ((a) b))) b = ( )

(a*(a'+b))'+b

NOT (a AND (NOT a OR b)) OR b

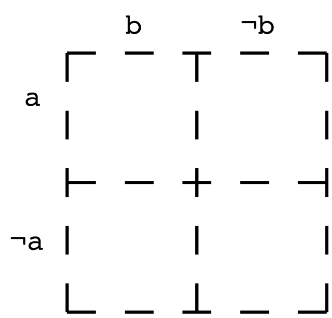
Parens

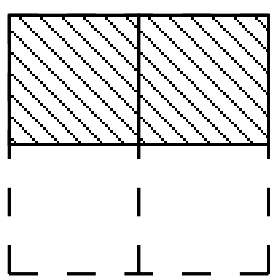
```
( ((a) ((a) b)) ) b          transcription
   (a) ((a) b)    b          inv
   (a) (     )    b          per (a) b
       (     )               dom
```

Boolean Cubes

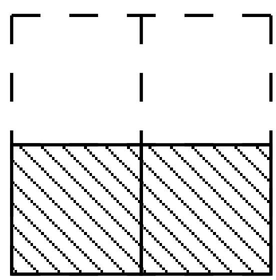
Constructive

```
                 a
             NOT a
            (NOT a OR b)
     (a AND (NOT a OR b))
 NOT (a AND (NOT a OR b))
 NOT (a AND (NOT a OR b)) OR b
```

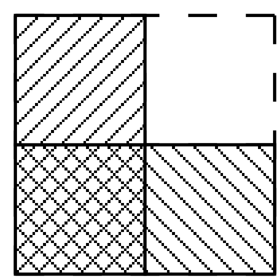




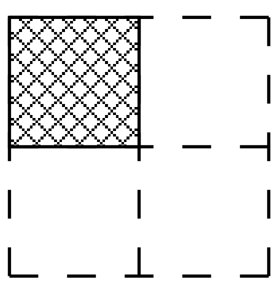
a



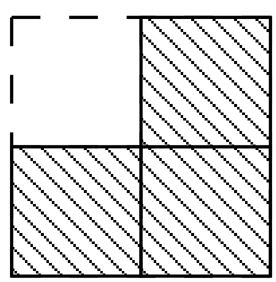
¬a



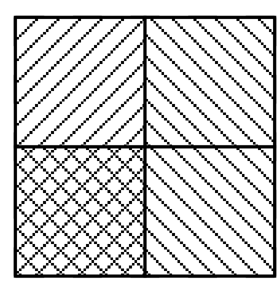
¬a **v b**



a & (¬a v b)

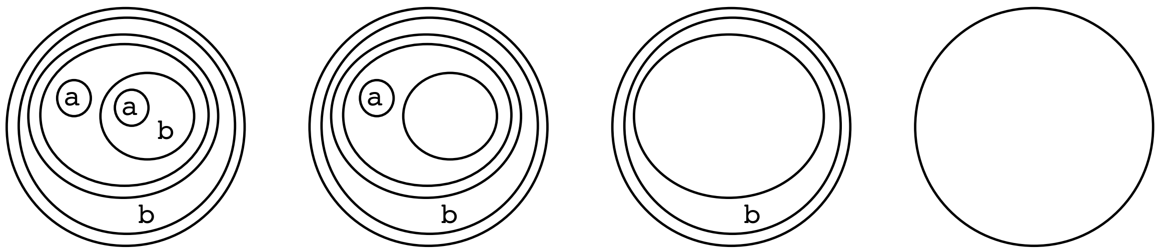


¬(a & (¬a v b))

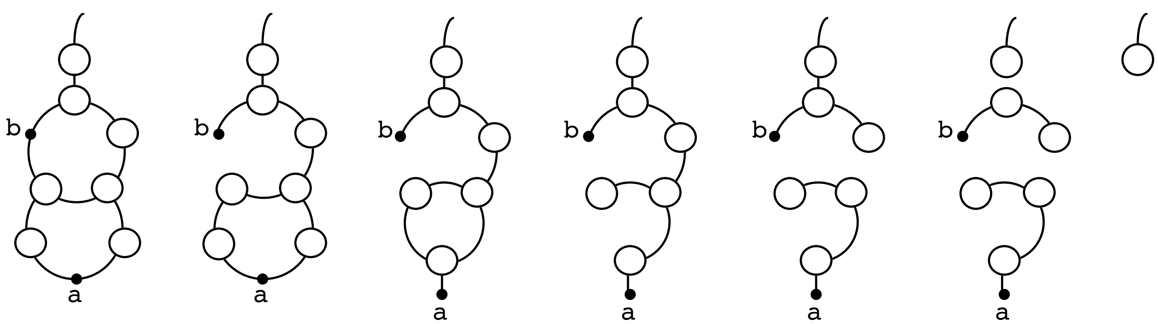


¬(a & (¬a v b)) **v b**

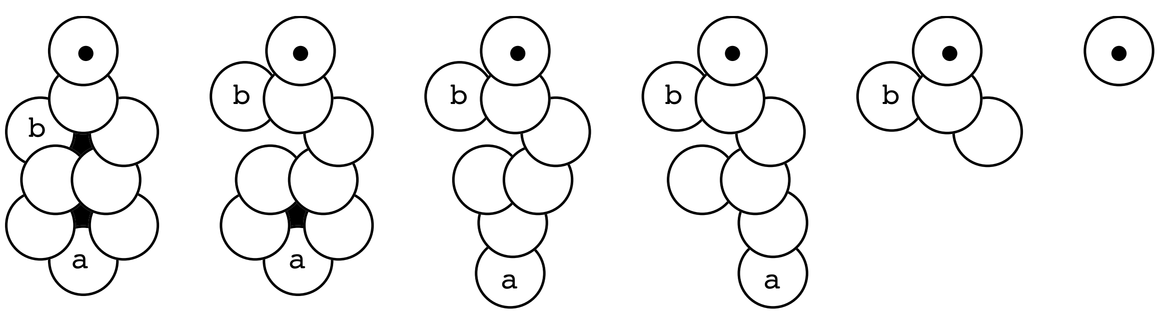
Enclosing Circles



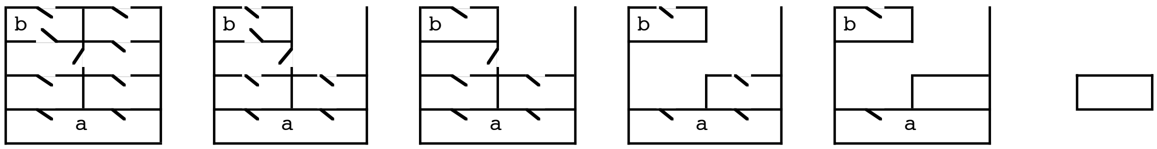
Distinction Networks



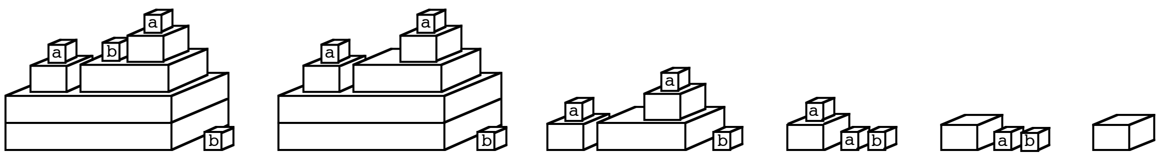
Distinction Steps



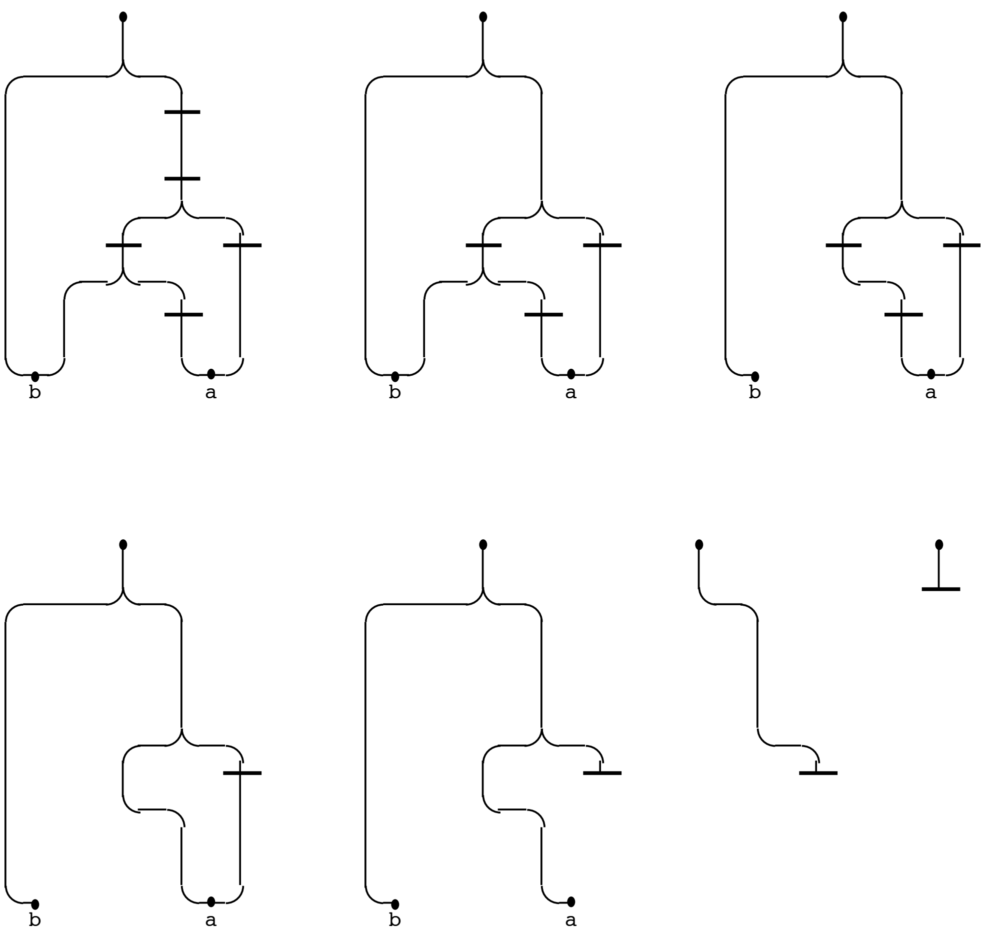
Distinction Rooms



Distinction Blocks



Bar Graphs



Distinction Paths