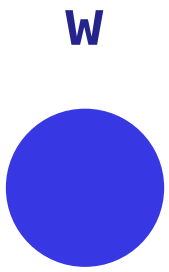
Dispersed System Formalism (DSF)

Draw topological diagrams with DSF

`A tiny Racket experiment`

Primitives

Example: water (w)

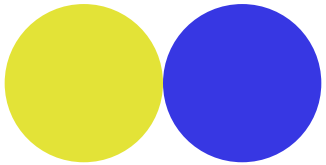


Operations

Connected (σ)

Subscript (optional 'h' or 'v') indicates orientation

(σ o w)

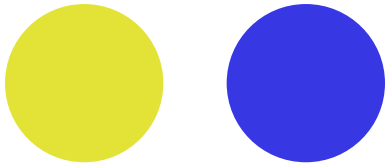


Operations

Mixed (:)

Topologically equivalent to mutual disconnection

(: o w)

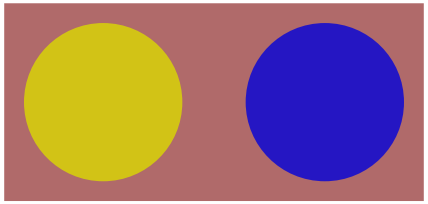


Operations

Enclosure (@)

Bounds a system in a container (capitalised symbol)

```
(@ (: o w) S)
```

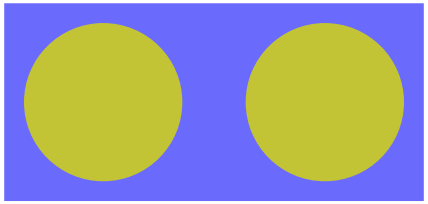


Operations

Enclosure (@)

Dispersion is inclusion (a bounded multiplicity)

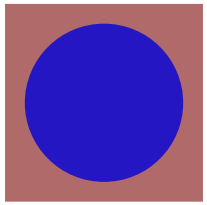
```
(@ (: o o) W)
```



Containers (simple/linear)

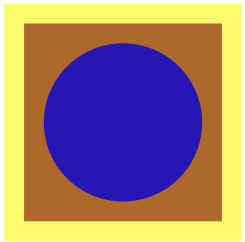
Example: solid (S)

```
(@ w S)
```



Containers (complex/nested)

```
(@ (@ w S) 0)
```



Operations (contd.)

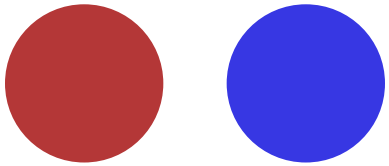
Other operations include:

overlap (& x y) and

mediate connection (^ x y z)

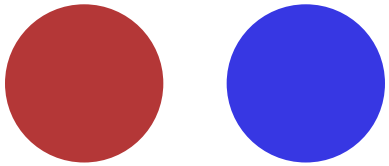
Aliases (more explicit)

```
(mix solid water)
```



Infix (Racket support)

```
(s . mix . w)
```



Tree representation

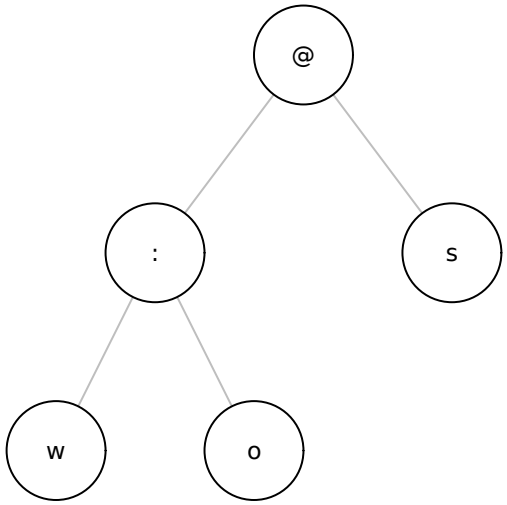
Define the tree

```
(define complex-tree
  '(@ (: w o) s))
```

Tree representation

Draw the tree

```
(draw-tree complex-tree)
```



Tree representation

Tree with aliases

```
(draw-tree complex-tree)
```