Theme One

A Program of Inquiry

by

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Example 5: Jets and Sharks **Files: jas.***

The propositional calculus based on the minimal negation operator can be interpreted in a way that resembles the logic of activation states and competition constraints in certain neural network models. One way to do this is by interpreting the blank or unmarked state as the resting state of a neural pool, the bound or marked state as its activated state, and by representing a mutually inhibitory pool of neurons A, B, C in the expression (A , B , C). To illustrate this possibility, we transcribe a well-known example from the parallel distributed processing literature [McR] and work through two of the associated exercises as portrayed in Existential Graph format.

File: jas.log

```
(( art    ),( al   ),( sam  ),( clyde ),( mike  ),
 ( jim    ),( greg ),( john ),( doug  ),( lance ),
 ( george ),( pete ),( fred ),( gene  ),( ralph ),
 ( phil   ),( ike  ),( nick ),( don   ),( ned   ),( karl ),
 ( ken    ),( earl ),( rick ),( ol    ),( neal  ),( dave ))
```

(jets , sharks)

```
( jets ,         ( art    ),( al   ),( sam  ),( clyde ),( mike  ),
                 ( jim    ),( greg ),( john ),( doug  ),( lance ),
                 ( george ),( pete ),( fred ),( gene  ),( ralph ))

( sharks ,       ( phil ),( ike  ),( nick ),( don ),( ned  ),( karl ),
                 ( ken  ),( earl ),( rick ),( ol  ),( neal ),( dave ))
```

((20's),(30's),(40's))

```
( 20's ,         ( sam    ),( jim  ),( greg ),( john ),( lance ),
                 ( george ),( pete ),( fred ),( gene ),( ken   ))

( 30's ,         ( al   ),( mike ),( doug ),( ralph ),( phil ),( ike  ),
                 ( nick ),( don  ),( ned  ),( rick  ),( ol   ),( neal ),
                 ( dave ))

( 40's ,         ( art ),( clyde ),( karl ),( earl ))
```

((junior_high),(high_school),(college))

```
( junior_high ,  ( art  ),( al    ),( clyde  ),( mike  ),( jim ),
                 ( john ),( lance ),( george ),( ralph ),( ike ))

( high_school ,  ( greg ),( doug ),( pete ),( fred ),( nick ),
                 ( karl ),( ken  ),( earl ),( rick ),( neal ),( dave ))

( college ,      ( sam ),( gene ),( phil ),( don ),( ned ),( ol ))
```

((single),(married),(divorced))

```
( single ,       ( art  ),( sam  ),( clyde ),( mike ),( doug ),( pete ),
                 ( fred ),( gene ),( ralph ),( ike  ),( nick ),( ken  ),
                 ( neal ))

( married ,      ( al  ),( greg ),( john ),( lance ),( phil ),
                 ( don ),( ned  ),( karl ),( earl  ),( ol   ))

( divorced ,     ( jim ),( george ),( rick ),( dave ))
```

((bookie),(burglar),(pusher))

```
( bookie ,       ( sam  ),( clyde ),( mike ),( doug ),
                 ( pete ),( ike   ),( ned  ),( karl ),( neal ))

( burglar ,      ( al     ),( jim ),( john ),( lance ),
                 ( george ),( don ),( ken  ),( earl  ),( rick ))

( pusher ,       ( art   ),( greg ),( fred ),( gene ),
                 ( ralph ),( phil ),( nick ),( ol   ),( dave ))
```

We now apply Study to the proposition defining the Jets and Sharks data base.

With a query on the name "ken" we obtain the following output, giving all the features associated with Ken:

File: ken.sen

```
ken
 sharks
  20's
   high_school
    single
     burglar
```

With a query on the two features "college" and "sharks" we obtain the following outline of all features satisfying these constraints:

File: cos.sen

```
college
 sharks
  30's
   married
    bookie
     ned
    burglar
     don
    pusher
     phil
     ol
```

From this we discover that all college Sharks are 30-something and married. Further, we have a complete listing of their names broken down by occupation.

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