

Structural System Property: *atis* **Interdependentness**

(*Structural system properties* are those properties that are part of the theory and describe patterns of system and negasystem connectedness. The structural properties define the topology of the system, and every affect relation defines a topology on the system.)

Interdependentness, ${}_N\mathfrak{S}$, =_{df} a *partition*, $\mathfrak{y} = (\mathcal{V} \subset \mathcal{G}_0, \mathcal{R} \subset \mathcal{G}_A)$, characterized by components that are incident to affect-relations for which both end-components are initiating- and receiving-end-components.

$${}_N\mathfrak{S} =_{df} \mathfrak{y} \mid \forall \mathbf{u}, \mathbf{v} \in \mathfrak{y}(\mathcal{V}) \exists \mathbf{e} \in \mathfrak{y}(\mathcal{R}) [\mathbf{e} = (\mathbf{u}, \mathbf{v}) \supset \mathbf{u}, \mathbf{v} \in {}_I\mathbf{E} \wedge \mathbf{u}, \mathbf{v} \in {}_T\mathbf{E}]$$

\mathcal{M} : Interdependentness measure, ${}_N\mathfrak{S}$, =_{df} a measure of components that are both initiating and receiving.

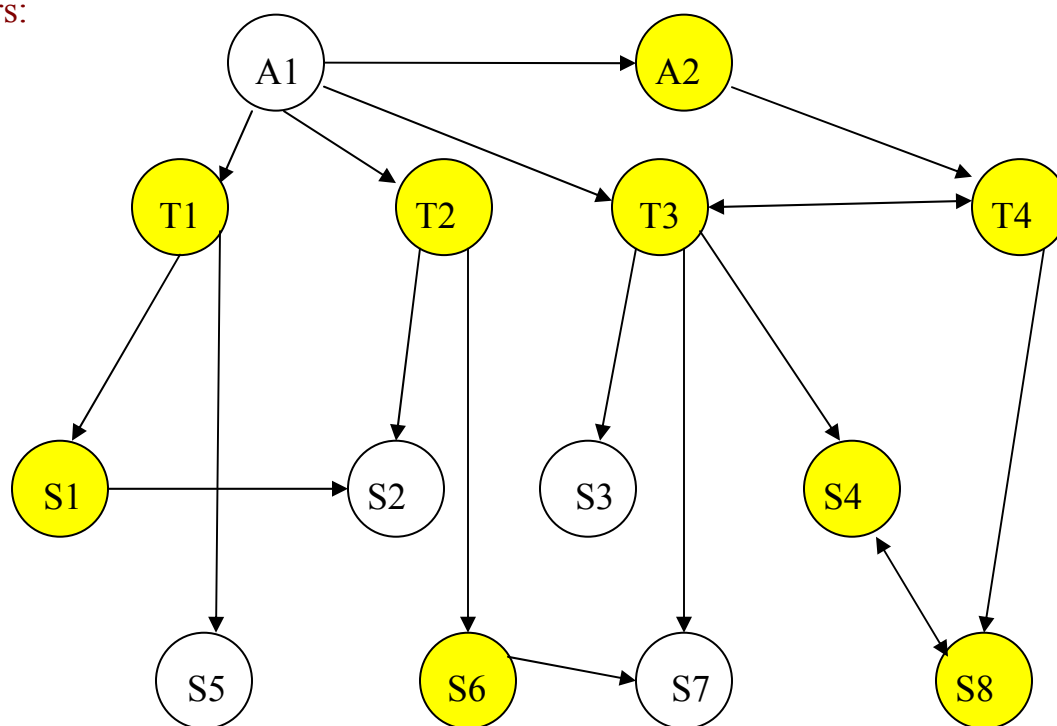
$$\mathcal{M}({}_N\mathfrak{S}) =_{df} \left\{ \left[\sum_{i=1, \dots, n} (\log_2 \prod_{j=1, \dots, m} |\mathbf{u} \mid \mathbf{u} \in {}_I\mathbf{E} \wedge \mathbf{u} \in {}_T\mathbf{E} \mid_j)_i \right] \div \mathbf{C} \right\} \times 100$$

Interdependentness in a School System

Administrators:

Teachers:

Students:



Affect Relation: *Controls Activities of*

In this system, there are 9 components that *Control Activities of* other components with respect to *Interdependentness*. Since there is only 1 affect-relation and 14 components, then the total possible affect relation paths is $P[Z(\mathfrak{S}_0)] = 236,975,181,590$; and therefore, $C = \log_2(P[Z(\mathfrak{S}_0)]) \approx 37$. The value is determined by finding the product of the degrees of each component that is both initiating and terminating. In this case the product is 4,320, and the $\log_2(4,320) \approx 12$. There are 14 paths related to *Interdependentness*.

Therefore: $M_{(N)}(\mathfrak{S}) \approx 36.85$.