Structural System Property: $_{atis}$Heterarchiness

(*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.)

Heterarchiness, $_{HA}\mathbb{S}$, $=_{df}$ a *partition*, $\mathcal{Y} = (\mathcal{V}\subset\mathcal{G}_0, \mathcal{R}\subset\mathcal{G}_{\mathcal{A}})$, characterized by components that are trail-connected to all other components. **[NOTE: Hierarchies are also heterarchies. As such they may be considered a subset of heterarchies.]**

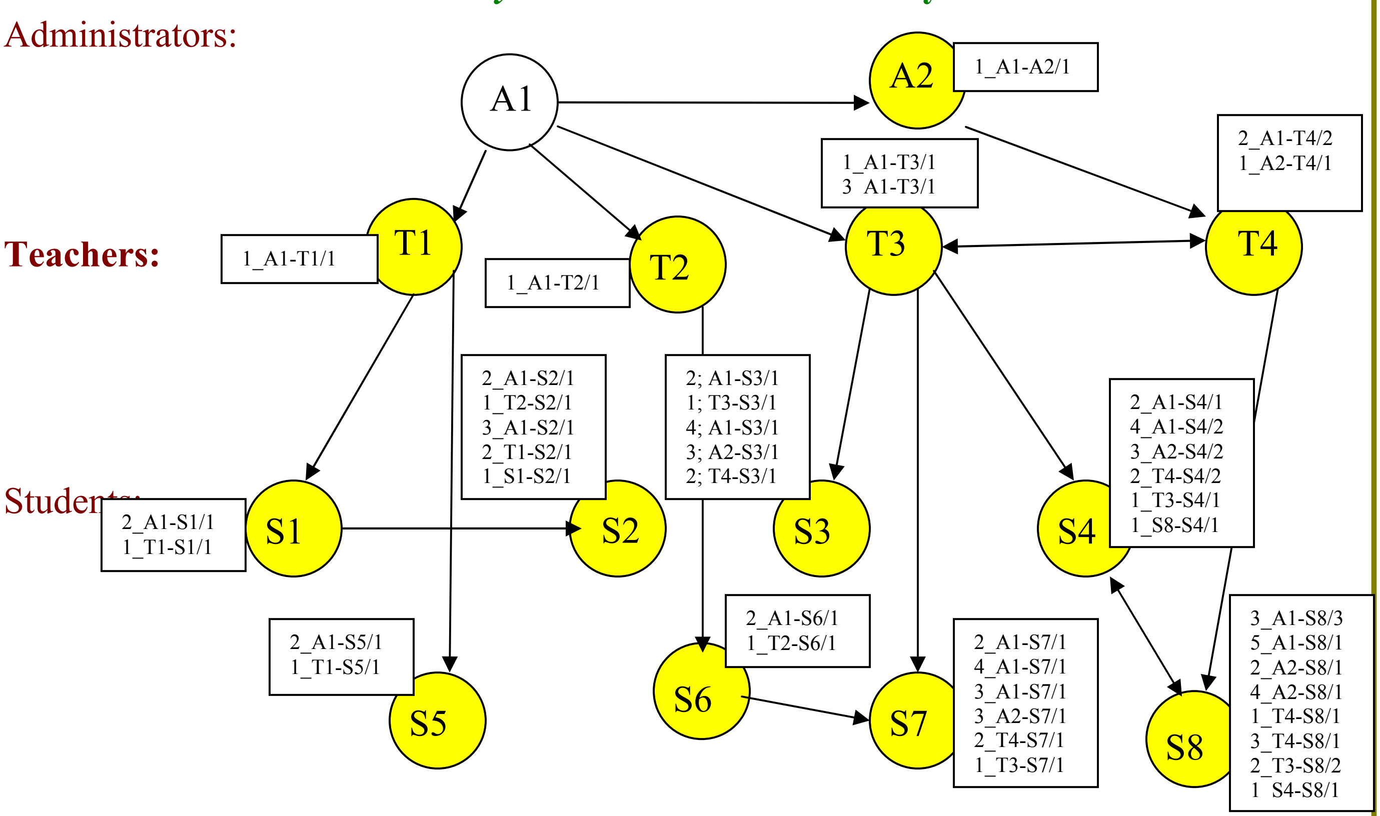
$$_{HA}\mathbb{S} =_{df} \mathcal{Y} \mid \forall \mathbf{u},\mathbf{v}\in\mathcal{Y}(\mathcal{V})\exists \mathbf{e}\in\mathcal{Y}(\mathcal{R})[\mathbf{e} = (\mathbf{u},\mathbf{v}) \supset \exists\ell^{trail}(\ell^{trail}(\mathbf{e}) \geq 1)]$$

$\mathcal{M}$: **Heterarchiness measure,** $\mathcal{M}(_{HA}\mathbb{S})$, $=_{df}$ a measure of affect-relation trail-lengths.

$$\mathcal{M}(_{HA}\mathbb{S}) =_{df} \left\{\left[\sum_{i=1,\ldots,n}\left(\sum_{j=1,\ldots,m}[|\ell^{trail}(\mathbf{e}) \mid \mathbf{e} = (\mathbf{u},\mathbf{v})|]_j\right)_i\right] \div \mathbf{C}\right\} \times 100$$

The diagram on the next page shows heterarchy in a school system:

Heterarchy-Relatedness in a School System



Affect Relation: *Controls Activities of*

In this system, there are 6 components that *Control Activities of* other components with respect to *Heterarchy-Relatedness*. Since there is only 1 affect-relation and 14 components, then the total possible affect relation paths is $\boldsymbol{P}[\mathcal{Z}(\mathbb{S}_0)] = 236,975,181,590$; and therefore, $\mathbf{C} = \log_2(\boldsymbol{P}[\mathcal{Z}(\mathbb{S}_0)]) \approx 37$. There are 57 paths related to *Heterarchy-Relatedness*.

Therefore: $\mathcal{M}({}_{HA}\mathbb{S}) \approx 150.85$**.**