

Dynamic System Property: *atis* **Adaptableness**

(*Dynamic system properties* are those properties that are part of the theory and describe patterns in time as change occurs within a system or between a system and its negasystem.)

Adaptableness, \mathfrak{S}_A , =_{df} a system compatibility change within certain limits to maintain stability under system environmental change.

$$\mathfrak{S}_A =_{df} \Delta \mathfrak{S}'_{t(1),t(2)} \Vdash \Delta \mathcal{E}_{t(1),t(2)} < \alpha \Vdash \mathfrak{S}_{SB_{t(1),t(2)}}$$

Adaptableness is defined as a change in system environment from t_1 to t_2 , that yields a change in system compatibility within certain limits from t_1 to t_2 , and that yields system stability at t_1 and t_2 .

\mathcal{M} : Adaptableness measure, $\mathcal{M}(\mathfrak{S})$, =_{df} a measure of system stability at time t_1 and t_2 , given a change in the environment at time t_1 and t_2 , and a change in compatibility within limits at time t_1 and t_2 .

$$\Delta \mathfrak{S}'_{t(1),t(2)}, \Delta \mathcal{E}_{t(1),t(2)} < \alpha \vdash$$

$\mathcal{M}(\mathfrak{S}) =_{df} \mathcal{M}(\mathfrak{S}_{SB_{t(1)}}, \mathfrak{S}_{SB_{t(2)}}) < \beta \equiv: |\mathcal{M}(\mathfrak{S}_{SB_{t(1)}}) - \mathcal{M}(\mathfrak{S}_{SB_{t(2)}})| < \beta$; where β is a value that defines a range within which the system remains stable.

‘ \Vdash ’ $\stackrel{\text{df}}{=}$ *Time-sequential yields*: *Time-sequential yields* are required in order to account for the dynamic aspect of these properties. This is not to be confused with the logical “yields,” \vdash , of the predicate calculus. The intent is somewhat the same, but, in particular, the Deduction Theorem does not apply. For example, in the definition of adaptable system, it is first recognized, possibly by means of an APT&C analysis, $\mathcal{A}(\mathcal{S})$, that there is a change in the negasystem from t_1 to t_2 . At those times, it is also recognized, again by $\mathcal{A}(\mathcal{S})$, that there is a change in compatibility; and it is also recognized by $\mathcal{A}(\mathcal{S})$ that stability has remained within acceptable limits. When this occurs, the system is *adaptable*. Note that for the measure of adaptability, ‘ \Vdash ’ is the “yields” of the predicate calculus.

‘ \Vdash ’ is *not* a “causal” relation, but one of recognizing system structure. The logic is one of recognition, not causality. That is, it is recognized that the first listing is observed first, followed by the second listing and then the third. As a result of this total observation, the measures are determined at each time to verify the changed values. As a result of these observations, it may be appropriate to establish a continual monitoring of the system to anticipate a validating of adaptableness, or to determine if stability is approaching its limit.