Set-Theoretic Property: $_{atis}$GeneralSystemObjectSet

(*Set-theoretic properties* are those properties that are part of the meta-theory and have been abducted from set theory to be used as a tool to provide solutions concerning the theory. Those solutions may be assigned as values to components or relations of the theory and thereby become part of the theory.)

General System Object-Set, $\mathcal{G}_0$, Construction Decision Procedure

1) Every *information base*, $\bar{I}_B$, defines affect relations, $\mathcal{A}_n \in \mathcal{A}$, by the unary- and binary-component-derived sets from the $\bar{I}_B$.

That is, the components of $\mathcal{A}_n$ are of the form: $\{\{x_i\},\{x_i, y_i\}\} \in \mathcal{A}_n \in \mathcal{A}$; such that an *affect relation* exists from x_i to y_i. The following functions, μ and β, define elements of a topology, τ_n,; that is, $\mu,\beta:\mathcal{A}_n \to \tau_n$, such that: $\mu\mathcal{A}_i^n = \{x_i\} \in \tau_n$; and $\beta\mathcal{A}_i^n = \{x_i, y_i\} \in \tau_n$. An additional function, φ, will also be required for certain properties, and will allow for specification of specific elements, as follows: $\varphi\mathcal{A}_i^n = y_i$. Hence, the elements of $\mathcal{G}_0$ can be specified by φ and $\mu \cap \beta$.

2) The set of elements of $\mathcal{G}_0$ will be defined by an existing $\bar{I}_B$ as follows:

$$\mathcal{G}_0 = \{x \mid \mathcal{A}_n \in \mathcal{A} \supset \exists i[(x \in \mu\mathcal{A}_i^n \cap \beta\mathcal{A}_i^n \vee x = \varphi\mathcal{A}_i^n]\}$$

3) New elements will be added to $\mathcal{G}_0$ by Rule 2) when the new element establishes a relation with an element in $\mathcal{G}_0$ so that it is an element of an $\mathcal{A}_i^n \in \mathcal{A}$.

4) No other objects will be considered as elements of $\mathcal{G}_0$ except as they are generated in accordance with Rules 1) to 3).