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

(*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.)

Affect relation set, $_{C}\mathcal{A}$, $=_{df}$ a relation-set of path-connected components that have the same qualifier.

$$_{C}\mathcal{A} =_{df} \{\{x\},\{x,y\}\} \mid P(x,y) \wedge x \neq y \wedge (x,y) \in {}_{PC}\mathcal{C}\}$$

An affect relation set, or connected affect relation is defined as a set of unary and binary sets; such that, the components satisfy a given predicate, are distinct, and the components are path-connected. The 'c' of 'c-Affect' defines the "type" of affect relation. The 'c' is required since '$\mathcal{A}$' defines the family of affect relations of which c-Affect is but one set of the family. Further, there is no distinction as to the placement of the subscripts on the left or right of the '$\mathcal{A}$'. All such designations identify a particular affect –relation as opposed to the family. A c-**Affect relation** is a set that consists of sets of *unary and binary sets*. For ease of reference, the following notation will be used: $\{\{x\},\{x,y\}\} = (x,y)$.

Affect Relation-Set, $\mathcal{G}_{\mathcal{A}} = \mathcal{A}$, Construction Decision Procedure

1) *Affect Relation-Set Predicate Schemas*, $\cup P_n(x_i,y_i) = P(\mathcal{A}_n)$, define the family of affect-relations, $\mathcal{A}_n \in \mathcal{A}$, as extensions of the predicate schemas. The elements of $\mathcal{A}_n$ are of the form $\{\{x\},\{x,y\}\}$ that indicates that an *affect relation* has been determined to exist from x to y. '$P(\mathcal{A}_n)$' designates the predicates that define $\mathcal{A}_n$.
2) The *Affect-Relation Transition Function*, ϕ_n, is defined by:

   ϕ_n: $X \times Y \rightarrow \mathcal{A}_n \mid X,Y \subset \bar{I}_B$.∧. $\phi_n(X \times Y) = \{\{\{x_i\},\{x_i,y_i\}\} \mid P_n\{\{x_i\},\{x_i,y_i\}\} \in P(\mathcal{A}_n) \wedge x_i \in X \wedge y_i \in Y\}$.
3) The family of affect relations, $\mathcal{A} = \mathcal{G}_{\mathcal{A}}$, is defined by applications of the function defined in 2) for all elements in $\bar{I}_B$ to each $P(\mathcal{A}_n)$ defined in 1).
4) New components are evaluated for each $P(\mathcal{A}_n)$ defined in 1) and included in the appropriate extension when the value is true.
5) No other objects will be considered as elements of $\mathcal{A}_n \in \mathcal{A} = \mathcal{G}_{\mathcal{A}}$ except as they are generated in accordance with rules 1) through 4).