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ATIS Axioms as Extended from SIGGS

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<u>This Report was Initially Submitted in 2005 as Part of the</u>
Proffitt Grant Research "Analysis of Patterns in Time and Configuration"
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<u>NOTE</u>: This Report has now been updated with respect to *ATIS* and is published in 2015.

ATIS Axioms as Extended from SIGGS

Presented in this report are extensions of the 201 axioms of the SIGGS Theory as cited in *Development of Educational Theory Derived from Three Educational Theory Models*.[1] The extensions of these axioms include generalizations for *Axiomatic Theories of Intentional Systems* (*ATIS*) and the defining of various subsystems to account for some of these generalizations. Logico-mathematical formalizations of these axioms are also included.

Many of the axioms had previously been deleted in other reports from various treatments of SIGGS as they were stated in a way that they were specific to education systems. However, *ATIS* extended the properties that had been listed in SIGGS and also introduced the *Warner Subsystems*. This extension of the properties and introduction of the *Warner Subsystems* has increased their number from the 73 SIGGS "education properties" to 136 contained in the *ATIS* development. The new axioms will be presented in another report.

With these new developments, the education axioms were then generalized so that they are applicable to any intentional system, thus making it possible to include them in the current list. Any axiom that contains a *Warner Subsystem* is one of the previous axioms that had been restricted to education properties, but has now been defined for an y intentional system.

In addition to the substantive extensions of SIGGS, Thompson also introduced a nomenclature that facilitates the recognition and interpretation of the various properties. Most properties will fall into one of seven categories shown below in *Primary Property Categories*. While an example of each property is given in this listing, a complete list of the properties for each category is provided in the *ATIS Properties*.

[1] Maccia, Elizabeth Steiner and George S. Maccia (1966), *Development of Educational Theory Derived from Three Educational Theory Models*, The Ohio State University, Research Foundation, Columbus, Ohio.

Primary Property Categories

$\mathcal{A}$ designates the affect relation properties; e.g., ${}_{d}\mathcal{A}$ designates "directed affect relation."

$\mathcal{B}$ designates the behavior properties; e.g., ${}_{\mathfrak{D}}\mathcal{B}$ designates "dispositional behavior."

$\mathcal{C}$ designates the connected properties; e.g., ${}_{HA}\mathcal{C}$ designates "heterarchy connected."

$\mathfrak{f}_X$ designates the "feed-" transmission properties; e.g., $\mathfrak{f}_I$ designates "feedin."

$\mathcal{F}$ designates the filtration properties; e.g., ${}_{\mathbb{S}}\mathcal{F}$ designates "system-filtration."

$\mathfrak{X}$ designates the morphism properties; e.g., $\mathfrak{E}$ designates "endomorphism."

$X_{\mathcal{P}}$ designates the "-put" properties; e.g., $T_{\mathcal{P}}$ designates "to-put."

$\mathcal{S}$ designates the state properties; e.g., ${}_{DV}\mathcal{S}$ designates "developing states."

$\mathfrak{S}$ designates the system properties; e.g., ${}_{SR}\mathfrak{S}$ designates "(system) strain."

$\mathcal{W}$ designates the *Warner Partition Properties*; e.g., ${}_{\mathcal{S}}\mathcal{W}$ designates "strategic system."

Nomenclature

To facilitate the reading of the formalization of the axioms, the following nomenclature has been developed.

$X^{\uparrow}$ designates that property X is increasing.

$X^{\downarrow}$ designates that property X is decreasing.

X_c designates that property X is constant.

X^{min} designates that the value of property X is minimum.

X^{max} designates that the value of property X is maximum.

≈ designates an approximate value.

$X^{\approx min}$ designates that the value of property X approaches minimum value.

$X^{\approx max}$ designates that the value of property X approaches maximum value.

ΔX designates change in property X.

$X^{\uparrow \alpha : t(1)}$ designates that X increases to α at time 1.

t_1 is equivalent to t(1) and designates time 1.

∧ designates logical "and."

∨ designates logical "or."

⊃ designates logical "implies."

≡ designates logical "if and only if," or equivalence of sets.

~ designates logical "not."

∀ designates logical universal quantifier "for all."

∃ designates logical existential quantifier "there exists."

$\exists^n$ designates logical existential quantifier "there exist n."

$\sim\exists^{n+1}$ designates logical existential quantifier "there exist at most n."

$\exists^!$ (or $\exists^1$) designates logical existential quantifier "there exists exactly one."

ι designates logical descriptor quantifier "that" or "the"; e.g., '$\iota x \mathcal{P}(x)$' is read, "the x such that P(x)" or '$\iota x \mathcal{P}(x)$' is read, "that x such that P(x)"

ŵ designates the class quantifier; e.g., '$\hat{w}\mathcal{P}(w)$' is read "the class of w determined by $\mathcal{P}(w)$."

(X | y) designates that property X is qualified by y, and is read "X given y" or "X restricted by y."

$X_{\mathcal{A}}$ designates the referent family of affect relations of system X.

${}_y\mathcal{A}$ designates the y affect relation set.

Designation of Intentional Affect Relations

The *Intentional Affect Relations* are those relations in which at least one component is human. The interpretation of such affect relations is system-specific. That is, while the initial application of SIGGS was to an educational system, such affect relations are applicable to any human component-type system. SIGGS introduced ten different types of behavioral affect relations as generalized below. The name of the affect relation is followed in parentheses by the abbreviation that will be used in the formalization of the axioms. One additional relation, 'control', is introduced that will be required in the development of *ATIS*.

Control ($\mathcal{C}$): Affect Relations defined by components of a Subsystem that are related to other components in a manner defined to be "control."

Development Inquiry ($\mathcal{D}$): Affect relations defined by components of the *Human Component Control Subsystem* of the *Leadership Subsystem* that are related to other components in a manner defined to be "developmental inquiring."

Expert ($\mathcal{E}$): Affect relations defined by components of the *Population Subsystem* that are related to other components in a manner defined to be "expert."

Facilitating ($\mathcal{F}$): Affect relations defined by components of the *Infrastructure Subsystem* that are related to other components in a manner defined to be "facilitating."

Inquiry ($\mathcal{Q}$): Affect relations defined by components of the *Leadership Subsystem* that are related to other components in a manner defined to be "inquiring."

Instructional ($\mathcal{I}$): Affect relations defined by components of the *Leadership Subsystem* that are related to other components in a manner defined to be "instructional."

Legitimate ($\mathcal{L}$): Affect relations defined by components of the *Organic Essential Subsystem* that are related to other components in a manner defined to be "legitimate."

Punishment ($\mathcal{P}$): Affect relations defined by components of the *Fielded Military Subsystem* that are related to other components in a manner defined to be "punishing."

Referent ($\mathcal{R}$): Specified affect relations.

Research Inquiry ($\mathcal{S}$): Affect relations defined by components of the *Human Component Intelligence Subsystem* of the *Leadership Subsystem* that are related to other components in a manner defined to be "research inquiring."

Reward ($\mathcal{W}$): Affect Relations defined by components of the *Dynamic Teleological Subsystem* of the *Leadership Subsystem* that are related to other components in a manner defined to be "rewarding."

Support ($\mathcal{U}$): Affect Relations defined by components of a Subsystem that are related to other components in a manner defined to be "support."

SIGGS Axiom List

[The numbers of the axioms refer to their listing in *Steiner and Maccia*. By clicking on the links, the definition of each property will be accessed.]

1. If system environmental change increases, then change in system input is greater than some value.

2. If system environmental change increases, then change in fromput is greater than some value.

3. If system environmental change increases, then change in feedback is greater than some value.

4. If system environmental change increases, then change in filtration is greater than some value.

5. If system toput increases, then input increases to some value and then decreases.

6. If system toput greater than some value increases, then fromput increases.

7. If system toput approaches minimum, then fromput increases.

8. If system toput increases, then filtration decreases to some value and then increases.

9. If system toput increases, then regulation less than some value increases.

10. If system input decreases, then fromput decreases.

11. If system input decreases, then storeput decreases.

12. If system input increases, then filtration decreases.

13. If system input decreases, then filtration increases.

14. If system input is greater than some value, then regulation is greater than some value.

15. If system output increases, then fromput increases.

16. If system storeput decreases, then feedout decreases.

17. If system storeput increases, then adaptability increases.

18. If system storeput increases, then efficiency decreases.

19. If system feedin increases, then fromput increases to some value and then decreases.

20. If system feedin increases, then spillage increases.

21. If system feedthrough increases, then compatibility increases.

22. If system feedthrough is less than some value, then filtration is greater than some value or spillage is greater than some value.

23. If change in system feedback is greater than some value, then system environmental change increases.

24. If system feedback is greater than some value, then storeput is less than some value.

25. If system feedback is greater than some value, then regulation is less than some value.

26. If system filtration is greater than some value, then compatibility is greater than some value.

27. If system is filtration less than some value, then compatibility is less than some value.

28. If system filtration increases, then adaptability increases.

29. If system openness increases, then efficiency decreases.

30. If system environmental change increases and fromput increases, then change in feedout is greater than some value.

31. If system environmental change increases and fromput increases, then change in feedthrough is greater than some value.

32. If system environmental change is greater than some value and feedthrough is greater than some value, then stability is greater than some value.

33. If system toput increases and fromput increases, then feedthrough increases.

34. If system toput is constant and efficiency is greater than some value, then regulation is less than some value.

35. If system input is constant and fromput is constant, then output is constant.

36. If system input increases and storeput is constant, then feedout increases.

37. If system input increases and storeput is less than some value, then change in input equals change in storeput.

38. If change in system input is greater than change in feedthrough, then spillage increases.

39. If system input is greater than some value and spillage is less than some value, then storeput increases.

40. If system input is less than some value and spillage is less than some value, then storeput decreases.

41. If system input is constant and efficiency at a given time is less than some value, then efficiency increases.

42. If the ratio of maximum system selective information to input decreases, then feedout decreases.

43. If system fromput increases and output is less than some value, then feedout decreases.

44. If change in system fromput is less than some value and change in storeput is less than zero and change in fromput is greater than zero and the negative of change in storeput is greater than some value, then efficiency decreases.

45. If system output increases and feedback is greater than some value, then input increases.

46. If system storeput increases and (filtration decreases or spillage decreases), then information growth increases.

47. If system feedthrough is greater than some value and spillage is less than some value and feedback is greater than some value, then efficiency is greater than some value.

48. If system (feedin increases and feedout is constant and compatibility is constant) or (feedin is constant and feedout increases and compatibility is constant) or (feedin is constant and feedout is constant and compatibility decreases), then openness increases.

49. If system (feedin decreases and feedout is constant and compatibility is constant) or (feedin is constant and feedout decreases and compatibility is constant) or (feedin is constant and feedout is constant and compatibility increases), then openness decreases.

50. Change in system input is greater than change in fromput.

51. Change in system feedin is greater than change in feedout.

52. System efficiency is equal to the maximum efficiency if and only if feedin is equivalent to feedout.

53. If system complete-connectivity increases, then flexibility increases.

54. If strongness decreases, then wholeness increases. Not Valid. **This axiom has been shown not to be valid**.

55. If strongness increases, then hierarchical-order decreases.

56. If strongness increases, then flexibility increases.

57. If unilateralness, then hierarchical-order.

58. If disconnectivity is greater than some value, then independence increases.

59. If disconnectivity is greater than some value, then segregation increases.

60. If vulnerability increases, then complete-connectivity decreases.

61. If passive-dependence increases, then centrality increases.

62. If active-dependence increases, then centrality decreases.

63. If interdependence increases, then complexity-growth increases.

64. If hierarchical-order increases, then vulnerability increases and flexibility decreases.

65. If compactness increases, then hierarchical-order decreases.

66. If centrality increases, then passive-dependence increases.

67. If centrality increases, then active-dependence decreases.

68. If centrality is less than some value, then independence increases.

69. If centrality is less than some value, then centrality increases.

70. If wholeness increases and hierarchical-order is constant, then integration increases.

71. The limit of the ratio of active-dependence to passive-dependence as unilateralness increases is equal to 1.

72. If system maximum passive-dependence is with respect to Leadership Subsystem affect relations; then wholeness increases, and hierarchical-order increases, and centrality increases.

73. If system strongness is with respect to Leadership Subsystem affect relations; then there is complete-connectivity with respect to referent affect relations.

74. If system strongness is with respect to referent affect relations; then vulnerability with respect to Leadership Subsystem affect relations decreases.

75. If system strongness is with respect to referent affect relations; then vulnerability with respect to referent affect relations decreases.

76. If system strongness with respect to reward affect relations is greater than some value; then complete-connectivity with respect to referent affect relations increases, or strongness with respect to referent affect relations increases.

77. If system strongness with respect to reward affect relations is greater than some value; then wholeness is with respect to Leadership Subsystem affect relations, and hierarchical-order is with respect to Leadership Subsystem affect relations.

78. If system strongness with respect to Leadership Subsystem affect relations increases, and hierarchical-order with respect to Leadership Subsystem affect relations decreases; then strongness with respect to referent affect relations increases.

79. If system strongness with respect to referent affect relations is greater than some value, and hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, then wholeness is with respect to Leadership Subsystem affect relations.

80. If system strongness with respect to referent affect relations is less than some value, and centrality is with respect to Leadership Subsystem affect relations; then wholeness is with respect to Leadership Subsystem affect relations.

81. If system strongness with respect to referent affect relations is less than some value, and hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, and centrality is with respect to Leadership Subsystem affect relations; then compactness with respect to Leadership Subsystem affect relations increases.

82. If system wholeness is with respect to referent affect relations; then complete-connectivity with respect to referent affect relations increases, or strongness with respect to referent affect relations increases.

83. If system hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, and flexibility with respect to Leadership Subsystem affect relations is greater than some value; then disconnectivity is with respect to referent affect relations.

84. There is disconnectivity greater than some value with respect to instructional affect relations.

85. There is disconnectivity greater than some value with respect to inquiry affect relations.

86. If system state-steadiness is greater than some value, then strain increases.

87. If system stress is less than some value, then state-steadiness is constant.

88. If system stress greater than some value increases, then strain increases.

89a. System state-steadiness increases if and only if state-determinacy increases.

89b. System state-steadiness decreases if and only if state-determinacy decreases.

90. If system toput increases, then centrality decreases.

91. If system feedin decreases, then unilateralness decreases.

92. If system feedin less than some value decreases, then hierarchical-order decreases.

93. If system feedin decreases, then complexity-degeneration increases.

94. If system feedout is less than some value, then complexity-degeneration increases.

95. If system feedthrough increases, then weakness is less than some value.

96. If system toput is close to minimum and fromput increases, then disconnectivity increases.

97. If system feedin increases and compatibility is close to minimum, then disconnectivity increases.

98. If system storeput increases, and filtration decreases or spillage decreases; then integration increases.

99. If system input increases, and storeput is greater than some value; then segregation is with respect to referent affect relations.

100. If system complete-connectivity increases, then feedin increases.

101. If system weakness is greater than some value, then feedthrough is less than some value.

102. If system interdependence increases, then feedin increases.

103. If system wholeness increases, then regulation is less than some value.

104. If system compactness greater than some value increases, then efficiency increases.

105. If system centrality increases, then toput decreases.

106. If system complete-connectivity increases or strongness increases, then toput increases.

107. If system complete-connectivity increases or strongness increases, then input increases.

108. If system complete-connectivity increases or strongness increases, then filtration decreases.

109. If system complete-connectivity increases or strongness increases, then spillage increases.

110. If system complete-connectivity increases or strongness increases, then 0 is less than change in fromput, and change in fromput is less than change in input.

111. If system complete-connectivity increases or strongness increases, then change in storeput is greater than change in fromput.

112. If system strongness increases and hierarchical-order is constant, then regulation decreases.

113. If system wholeness increases and hierarchical-order is constant, then efficiency decreases.

114. If system weakness and hierarchical-order, then flexibility decreases.

115. If system unilateralness, or weakness increases, or disconnectivity increases; then input decreases and fromput decreases.

116. If system passive-dependence with respect to reward affect relations increases, then feedout decreases.

117. If system passive-dependence with respect to reward affect relations increases, then adaptability greater than some value increases.

118. If system independence with respect to Leadership Subsystem affect relations increases, then fromput increases.

119. If system independence with respect to Leadership Subsystem affect relations increases, then output is less than some value.

120. If system independence with respect to Leadership Subsystem affect relations increases, then feedout decreases.

121. If system wholeness with respect to referent affect relations is greater than some value, then the absolute value of the difference of fromput from maximum fromput is greater than some value.

122. If system wholeness with respect to referent affect relations is greater than some value, then openness approaches minimum.

123. If system hierarchical-order with respect to Leadership Subsystem affect relations increases, then filtration increases.

124. If system complexity with respect to facilitating affect relations is greater than some value, then regulation is greater than some value.

125. If system complexity with respect to facilitating affect relations is greater than some value, then feedthrough with respect to facilitating affect relations is less than some value.

126. If system passive-dependence with respect to inquiry affect relations and legitimate affect relations increases, then feedout increases and spillage increases and maximum selective information is greater than some value.

127. If system passive-dependence with respect to inquiry affect relations and expert affect relations increases, then feedout decreases and spillage greater than some value increases and maximum selective information is less than some value.

128. If system active-dependence with respect to facilitating affect relations and legitimate affect relations is greater than some value, then regulation is less than some value.

129. If system wholeness with respect to inquiry affect relations and referent affect relations increases, then the ratio of maximum selective information to input increases.

130. If system disconnectivity with respect to instructional affect relations and referent affect relations is greater than some value, and complete-connectivity with respect to instructional affect relations and referent affect relations increases, and wholeness with respect to instructional affect relations and referent affect relations increases; then input increases, fromput increases, feedout decreases, and regulation increases.

131. If system disconnectivity is with respect to instructional affect relations and expert affect relations is greater than some value, complete-connectivity is with respect to instructional affect relations and expert affect relations increases, and wholeness with respect to instructional affect relations and expert affect relations increases; then input increases, storeput increases, feedout increases, and filtration increases.

132. If system disconnectivity with respect to instructional affect relations and referent affect relations is greater than some value, passive-dependence with respect to instructional affect relations and referent affect relations increases, and wholeness with respect to instructional affect relations, and referent affect relations increases; then input decreases, fromput decreases, feedout decreases, and regulation decreases.

133. If system disconnectivity with respect to instructional affect relations and reward affect relations is greater than some value, passive-dependence with respect to instructional affect relations and reward affect relations increases, and wholeness with respect to instructional affect relations and reward affect relations increases; then if system environmental change is greater than some value, then adaptability is greater than some value, input is less than some value, storeput is less than some value, and filtration is greater than some value.

134. If system disconnectivity with respect to instructional affect relations and legitimate affect relations is greater than some value, passive-dependence with respect to instructional affect relations and legitimate affect relations increases, and wholeness with respect to instructional affect relations and legitimate affect relations increases; then feedout increases, spillage is greater than some value, and regulation is greater than some value.

135. If system disconnectivity with respect to instructional affect relations and punishment affect relations is greater than some value, passive-dependence with respect to instructional affect relations and punishment affect relations increases, wholeness with respect to instructional affect relations and punishment affect relations increases, and hierarchical-order with respect to instructional affect relations and punishment affect relations increases; then if system environmental change is greater than some value, then adaptability is less than some value, fromput decreases, feedout decreases, regulation decreases, stability increases, and equifinality increases.

136. If system maximum active dependence with respect to development inquiry affect relations and legitimate affect relations; then fromput is less than some value, filtration increases, spillage increases, regulation is less than some value, active-dependence with respect to inquiry affect relations decreases, and active-dependence with respect to instructional affect relations increases.

137. If system feedout is greater than some value and compatibility is less than some value, then segregation is less than some value.

138. If system toput increases and compactness greater than some value increases, then regulation increases.

139. If system toput increases and compactness greater than some value decreases, then efficiency decreases.

140. If system fromput is constant or decreases, complete-connectivity increases, and strongness increases; then feedthrough decreases.

141. If system toput increases, and independence with respect to Leadership Subsystem affect relations increases; then feedout increases.

142. If system feedback is greater than some value, passive-dependence is with respect to punishment affect relations, and active-dependence is greater than some value; then efficiency is greater than some value.

143. If system feedin is constant, then homeostasis is less than some value.

144. If system filtration decreases, then isomorphism increases.

145. If system filtration is greater than some value, then stability is greater than some value.

146. If system adaptability is greater than some value, then stability decreases.

147. If system toput increases and feedout approaches minimum, then stress increases.

148. If system environmental change is greater than some value, feedthrough is constant or less than some value, and feedback is greater than some value, then stability is less than some value.

149. If system filtration with respect to instructional affect relations increases, then isomorphism with respect to instructional affect relations increases.

150. If system automorphism increases; then input increases, storeput increases, fromput decreases, feedout decreases, filtration decreases, spillage decreases, and efficiency decreases.

151. If system isomorphism increases; then fromput decreases, and feedout decreases.

152. If system state-steadiness is greater than some value, then adaptability is less than some value.

153. If system state-determinacy increases, then regulation decreases.

154. If system state-determinacy increases, then selective information decreases.

155. If system equifinality is greater than some value, then regulation is less than some value.

156. If system equifinality is at a given time, and homeostasis is greater than some value; then regulation is less than some value.

157. If system isomorphism with respect to instructional affect relations increases; then fromput decreases, and feedout decreases.

158. If system toput increases, and size is constant; then feedback increases.

159. If system environmental change is greater than some value, compatibility is greater than some value, and stability is greater than some value; then storeput is greater than some value, or filtration is greater than some value, or spillage is greater than some value.

160. If system toput increases, fromput increases, and size is constant; then feedout increases.

161. If system output is constant, automorphism decreases, and homomorphism is greater than some value; then feedout decreases.

162. If system toput is less than some value, feedin increases, and stability is less than some value; then stability increases.

163. If system toput is greater than some value, feedin decreases, and stability is less than some value; then stability increases.

164. If system independence increases, then stability is less than some value.

165. If system flexibility decreases, then state-determinacy increases.

166. If system centrality increases, then state-steadiness increases.

167. If system complexity greater than some value increases, then size increases.

168. If system independence increases, and wholeness increases; then state-steadiness is greater than some value.

169. If system wholeness is greater than some value, and centrality is greater than some value; then state-determinacy is greater than some value.

170. If system centrality with respect to instructional affect relations increases, then isomorphism with respect to instructional affect relations increases.

171. If system disconnectivity with respect to facilitating affect relations is greater than some value, and wholeness with respect to facilitating affect relations is less than some value; then state-determinacy with respect to facilitating affect relations is less than some value.

172. If system automorphism increases, then wholeness decreases.

173. If system automorphism increases, then centrality decreases.

174. Change in system size is greater than change in hierarchical-order.

175. If system complexity-degeneration increases; then size-degeneration increases, or disconnectivity increases.

176. If system state-steadiness is less than some value; then segregation is less than some value, integration is less than some value, and homeostasis is less than some value.

177. If system weakness is maximum and size increases; then passive-dependence increases, or active-dependence increases.

178. If system hierarchical-order at a given time is greater than some value, and size at the given time is greater than some value; then independence at a later time increases.

179. If system size increases, and complexity-growth is constant; then vulnerability increases.

180. If system size increases, and complexity-growth is constant; then flexibility decreases.

181. If system size increases, and complexity-growth is constant; then centrality decreases.

182. If system size is constant, and complexity-degeneration increases; then disconnectivity increases.

183. If system size decreases, and complexity-degeneration increases; then disconnectivity decreases. Not Valid. **This axiom has been shown not to be valid**.

184. If system complexity increases, and size-growth is constant; then compactness decreases.

185. If system complexity increases, and size-growth is constant; then centrality increases.

186. If system centrality increases, and stress is greater than some value; then stability decreases.

187. If system stress is equal to 0, and centrality increases; then stability increases.

188. If system size increases and complexity-growth is constant; then state-determinacy increases.

189. If system maximum active-dependence is with respect to research inquiry affect relations and legitimate affect relations; then input increases, fromput increases, storeput increases, filtration increases, and automorphism with respect to instructional affect relations increases.

190. If system homomorphism at time 2 is greater than homomorphism at time 1; then toput approaches maximum, size-degeneration approaches maximum, and complexity-degeneration approaches maximum.

191. If system efficiency is greater than some value, and compactness is greater than some value; then state-determinacy is greater than some value.

192. If system size-growth decreases, and selective information-growth is constant; then complexity-growth increases.

193. If system size-degeneration decreases, and selective information-growth is constant; then complexity-degeneration increases.

194. If system size increases, and complexity-growth is constant; then toput increases.

195. If system size increases, and complexity-growth is constant; then feedin decreases.

196. If system size increases, and complexity-growth is constant; then feedout increases, and change in feedout decreases.

197. If system size increases, and complexity-growth is constant; then feedthrough increases.

198. If system size increases, and complexity-growth is constant; then feedback decreases.

199. If system size increases, and complexity-growth is constant; then regulation increases to some value and then decreases.

200. If system size increases, and complexity-growth is constant; then compatibility decreases.

201. If system size increases, and complexity-growth is constant; then efficiency increases to some value and then decreases.

Logico-Mathematical Formalization of *ATIS* Axioms

1. $\Delta \mathbb{S}'^{\uparrow} \supset \Delta I_{\mathcal{P}} > \alpha$

   If system environmental change increases, then change in system input is greater than some value.

2. $\Delta \mathbb{S}'^{\uparrow} \supset \Delta F_{\mathcal{P}} > \alpha$

   If system environmental change increases, then change in fromput is greater than some value.

3. $\Delta \mathbb{S}'^{\uparrow} \supset \Delta \oint_{B} > \alpha$

   If system environmental change increases, then change in feedback is greater than some value.

4. $\Delta \mathbb{S}'^{\uparrow} \supset \Delta\, {}_{\mathbb{S}}\mathcal{F} > \alpha$

   If system environmental change increases, then change in filtration is greater than some value.

5. $T_{\mathcal{P}}^{\uparrow} \supset \sigma\,(I_{\mathcal{P}}^{\uparrow\alpha:t(1)}, I_{\mathcal{P}}^{\downarrow\beta:t(2)}) \mid \alpha > \beta$

   If system toput increases, then input increases to some value and then decreases.

6. $(T_{\mathcal{P}} > \alpha)^{\uparrow} \supset F_{\mathcal{P}}^{\uparrow}$

   If system toput greater than some value increases, then fromput increases.

7. $T_{\mathcal{P}} \approx 0 \supset F_{\mathcal{P}}^{\uparrow}$

   If system toput approaches minimum, then fromput increases.

8. $T_{\mathcal{P}}^{\uparrow} \supset \sigma\,({}_{\mathbb{S}}\mathcal{F}^{\downarrow\alpha:t(1)}, {}_{\mathbb{S}}\mathcal{F}^{\uparrow\beta:t(2)}) \mid \alpha < \beta$

   If system toput increases, then filtration decreases to some value and then increases.

9. $T_{\mathcal{P}}^{\uparrow} \supset ({}_{\mathbb{S}'}\mathcal{F} < \alpha)^{\uparrow}$

   If system toput increases, then regulation less than some value increases.

10. $I_{\mathcal{P}}^{\downarrow} \supset F_{\mathcal{P}}^{\downarrow}$

    If system input decreases, then fromput decreases.

11. $I_{\mathcal{P}}^{\downarrow} \supset S_{\mathcal{P}}^{\downarrow}$

    If system input decreases, then storeput decreases.

12. $I_{\mathcal{P}}^{\uparrow} \supset {}_{\mathbb{S}}\mathcal{F}^{\downarrow}$

    If system input increases, then filtration decreases.

13. $I_{\mathcal{P}}^{\downarrow} \supset {}_{\mathbb{S}}\mathcal{F}^{\uparrow}$

    If system input decreases, then filtration increases.

14. $I_{\mathcal{P}} > \alpha \supset {}_{\mathbb{S}'}\mathcal{F} > \beta$

    If system input is greater than some value, then regulation is greater than some value.

15. $O\mathcal{P}^{\uparrow} \supset F\mathcal{P}^{\uparrow}$

If system output increases, then fromput increases.

16. $S\mathcal{P}^{\downarrow} \supset \oint_{O}^{\downarrow}$

If system storeput decreases, then feedout decreases.

17. $S\mathcal{P}^{\uparrow} \supset {}_{A}\mathbb{S}^{\uparrow}$

If system storeput increases, then adaptability increases.

18. $S\mathcal{P}^{\uparrow} \supset {}_{EF}\boldsymbol{\mathcal{S}}^{\downarrow}$

If system storeput increases, then efficiency decreases.

19. $\oint_{I}^{\uparrow} \supset \sigma\,(F\mathcal{P}^{\uparrow\alpha:t(1)}, F\mathcal{P}^{\downarrow\beta:t(2)}) \mid \alpha > \beta$

If system feedin increases, then fromput increases to some value and then decreases.

20. $\oint_{I}^{\uparrow} \supset {}_{\mathbb{S}}\mathcal{F}^{\uparrow}$

If system feedin increases, then spillage increases.

21. $\oint_{T}^{\uparrow} \supset \mathsf{C}^{\uparrow}$

If system feedthrough increases, then compatibility increases.

22. $\oint_{T} < \alpha \supset {}_{\mathbb{S}}\mathcal{F} > \beta \vee {}_{\mathbb{S}}\mathcal{F} > \gamma$

If system feedthrough is less than some value, then filtration is greater than some value or spillage is greater than some value.

23. $\oint_{B} > \alpha \supset \Delta\mathbb{S}'^{\uparrow}$

If change in system feedback is greater than some value, then system environmental change increases.

24. $\oint_{B} > \alpha \supset S\mathcal{P} < \beta$

If system feedback is greater than some value, then storeput is less than some value.

25. $\oint_{B} > \alpha \supset {}_{\mathbb{S}'}\mathcal{F} < \beta$

If system feedback is greater than some value, then regulation is less than some value.

26. ${}_{\mathbb{S}}\mathcal{F} > \alpha \supset \mathsf{C} > \beta$

If system filtration is greater than some value, then compatibility is greater than some value.

27. ${}_{\mathbb{S}}\mathcal{F} < \alpha \supset \mathsf{C} < \beta$

If system is filtration less than some value, then compatibility is less than some value.

28. ${}_{\mathbb{S}}\mathcal{F}^{\uparrow} \supset {}_{A}\mathbb{S}^{\uparrow}$

If system filtration increases, then adaptability increases.

29. ${}_{O}\mathbb{S}^{\uparrow} \supset {}_{EF}\mathcal{S}^{\downarrow}$

If system openness increases, then efficiency decreases.

30. $\Delta\mathbb{S}'^{\uparrow} \wedge F\mathcal{P}^{\uparrow} \supset \Delta f_{O} > \alpha$

If system environmental change increases and fromput increases, then change in feedout is greater than some value.

31. $\Delta\mathbb{S}'^{\uparrow} \wedge F\mathcal{P}^{\uparrow} \supset \Delta\mathfrak{f}_{T} > \alpha$

If system environmental change increases and fromput increases, then change in feedthrough is greater than some value.

32. $\Delta\mathbb{S}' > \alpha \wedge \mathfrak{f}_{T} > \beta \supset {}_{SB}\mathbb{S} > \gamma$

If system environmental change is greater than some value and feedthrough is greater than some value, then stability is greater than some value.

33. $T\mathcal{P}^{\uparrow} \wedge F\mathcal{P}^{\uparrow} \supset \mathfrak{f}_{T}^{\uparrow}$

If system toput increases and fromput increases, then feedthrough increases.

34. $T\mathcal{P}^{c} \wedge {}_{EF}\mathcal{S} > \beta \supset {}_{\mathbb{S}'}\mathcal{T} < \gamma$

If system toput is constant and efficiency is greater than some value, then regulation is less than some value.

35. $I\mathcal{P}^{c} \wedge F\mathcal{P}^{c} \supset O\mathcal{P}^{c}$

If system input is constant and fromput is constant, then output is constant.

36. $I\mathcal{P}^{\uparrow} \wedge S\mathcal{P}^{c} \supset \mathfrak{f}_{O}^{\uparrow}$

If system input increases and storeput is constant, then feedout increases.

37. $I\mathcal{P}^{\uparrow} \wedge S\mathcal{P} < \alpha \supset \Delta I\mathcal{P} = \Delta S\mathcal{P}$

If system input increases and storeput is less than some value, then change in input equals change in storeput.

38. $\Delta I\mathcal{P} > \Delta\mathfrak{f}_{T} \supset {}_{\mathbb{S}}\mathcal{F}^{\uparrow}$

If change in system input is greater than change in feedthrough, then spillage increases.

39. $I\mathcal{P} > \alpha \wedge {}_{\mathbb{S}}\mathcal{F} < \beta \supset S\mathcal{P}^{\uparrow}$

If system input is greater than some value and spillage is less than some value, then storeput increases.

40. $I\mathcal{P} < \alpha \wedge {}_{\mathbb{S}}\mathcal{F} < \beta \supset S\mathcal{P}^{\downarrow}$

If system input is less than some value and spillage is less than some value, then storeput decreases.

41. $I\mathcal{P}^{c} \wedge {}_{EF}\mathcal{S}_{t} < \beta \supset {}_{EF}\mathcal{S}^{\uparrow}$

If system input is constant and efficiency at a given time is less than some value, then efficiency increases.

42. $(H^{max}/I_{\mathcal{P}})^{\downarrow} \supset \oint_O^{\downarrow}$

If the ratio of maximum system selective information to input decreases, then feedout decreases.

43. $F_{\mathcal{P}}^{\uparrow} \wedge O_{\mathcal{P}} < \alpha \supset \oint_O^{\downarrow}$

If system fromput increases and output is less than some value, then feedout decreases.

44. $(\Delta F_{\mathcal{P}} < \alpha) \wedge (\Delta S_{\mathcal{P}} < 0 < \Delta F_{\mathcal{P}}) \wedge (\Delta S_{\mathcal{P}} < \beta) \supset {}_{EF}\mathcal{S}^{\downarrow}$

If change in system fromput is less than some value and change in storeput is less than zero and change in fromput is greater than zero and the negative of change in storeput is greater than some value, then efficiency decreases.

45. $O_{\mathcal{P}}^{\uparrow} \wedge \oint_B > \alpha \supset I_{\mathcal{P}}^{\uparrow}$

If system output increases and feedback is greater than some value, then input increases.

46. $S_{\mathcal{P}}^{\uparrow} \wedge ({}_{\mathbb{S}}\mathcal{F}^{\downarrow} \vee {}_{\mathbb{S}}\mathcal{F}^{\downarrow}) \supset H^{+\uparrow}$

If system storeput increases and (filtration decreases or spillage decreases), then information growth increases.

47. $(\oint_B > \alpha) \wedge ({}_{\mathbb{S}}\mathcal{F} < \beta) \wedge (\oint_B > \gamma) \supset {}_{EF}\mathcal{S} > \zeta$

If system feedthrough is greater than some value and spillage is less than some value and feedback is greater than some value, then efficiency is greater than some value.

48. $(\oint_I^{\uparrow} \wedge \oint_O^{c} \wedge C^{c}) \vee (\oint_I^{c} \wedge \oint_O^{\uparrow} \wedge C^{c}) \vee (\oint_I^{c} \wedge \oint_O^{c} \wedge C^{\downarrow}) \supset {}_{O}\mathbb{S}^{\uparrow}$

If system (feedin increases and feedout is constant and compatibility is constant) or (feedin is constant and feedout increases and compatibility is constant) or (feedin is constant and feedout is constant and compatibility decreases), then openness increases.

49. $(\oint_I^{\downarrow} \wedge \oint_O^{c} \wedge C^{c}) \vee (\oint_I^{c} \wedge \oint_O^{\downarrow} \wedge C^{c}) \vee (\oint_I^{c} \wedge \oint_O^{c} \wedge C^{\uparrow}) \supset {}_{O}\mathbb{S}^{\downarrow}$

If system (feedin decreases and feedout is constant and compatibility is constant) or (feedin is constant and feedout decreases and compatibility is constant) or (feedin is constant and feedout is constant and compatibility increases), then openness decreases.

50. $\Delta I_{\mathcal{P}} > \Delta F_{\mathcal{P}}$

Change in system input is greater than change in fromput.

51. $\Delta\oint_I > \Delta\oint_O$

Change in system feedin is greater than change in feedout.

52. ${}_{EF}\mathcal{S}^{max} :\equiv: \oint_I \equiv \oint_O$

System efficiency is equal to the maximum efficiency if and only if feedin is equivalent to feedout.

53. ${}_{CC}\mathcal{C}^{\uparrow} \supset {}_{F}\mathcal{C}^{\uparrow}$

If system complete-connectivity increases, then flexibility increases.

54. $_{S}\mathcal{Q}^{\downarrow} \supset \mathcal{W}^{\uparrow}$ Not Valid.

If strongness decreases, then wholeness increases.

55. $_{S}\mathcal{Q}^{\uparrow} \supset {}_{HO}\mathcal{Q}^{\downarrow}$

If strongness increases, then hierarchical-order decreases.

56. $_{S}\mathcal{Q}^{\uparrow} \supset {}_{F}\mathcal{Q}^{\uparrow}$

If strongness increases, then flexibility increases.

57. $_{U}\mathcal{Q} \supset {}_{HO}\mathcal{Q}$

If unilateralness, then hierarchical-order.

58. $_{D}\mathcal{Q} > n \supset {}_{I}\mathcal{Q}^{\uparrow}$

If disconnectivity is greater than some value, then independence increases.

59. $_{D}\mathcal{Q} > n \supset {}_{SG}\mathcal{Q}^{\uparrow}$

If disconnectivity is greater than some value, then segregation increases.

60. $_{V}\mathcal{Q}^{\uparrow} \supset {}_{CC}\mathcal{Q}^{\downarrow}$

If vulnerability increases, then complete-connectivity decreases.

61. $_{PD}\mathcal{Q}^{\uparrow} \supset {}_{C}\mathcal{Q}^{\uparrow}$

If passive-dependence increases, then centrality increases.

62. $_{AD}\mathcal{Q}^{\uparrow} \supset {}_{C}\mathcal{Q}^{\downarrow}$

If active-dependence increases, then centrality decreases.

63. $_{I}\mathcal{Q}^{\uparrow} \supset \mathcal{X}^{+\uparrow}$

If interdependence increases, then complexity-growth increases.

64. $_{HO}\mathcal{Q}^{\uparrow} \supset {}_{V}\mathcal{Q}^{\uparrow} \wedge {}_{F}\mathcal{Q}^{\downarrow}$

If hierarchical-order increases, then vulnerability increases and flexibility decreases.

65. $_{CP}\mathcal{Q}^{\uparrow} \supset {}_{HO}\mathcal{Q}^{\downarrow}$

If compactness increases, then hierarchical-order decreases.

66. $_{C}\mathcal{Q}^{\uparrow} \supset {}_{PD}\mathcal{Q}^{\uparrow}$

If centrality increases, then passive-dependence increases.

67. $_{C}\mathcal{Q}^{\uparrow} \supset {}_{AD}\mathcal{Q}^{\downarrow}$

If centrality increases, then active-dependence decreases.

68. ${}_{C}\mathscr{C} < n \supset {}_{I}\mathscr{C}^{\uparrow}$

If centrality is less than some value, then independence increases.

69. ${}_{C}\mathscr{C} < n \supset {}_{C}\mathscr{C}^{\uparrow}$

If centrality is less than some value, then centrality increases.

70. $\mathscr{W}^{\uparrow} \wedge {}_{HO}\mathscr{C} = c \supset {}_{IG}\mathscr{C}^{\uparrow}$

If wholeness increases and hierarchical-order is constant, then integration increases.

71. $\lim_{U\mathscr{C}\uparrow}({}_{AD}\mathscr{C} \,/\, {}_{PD}\mathscr{C}) = 1$

The limit of the ratio of active-dependence to passive-dependence as unilateralness increases is equal to 1.

72. $[{}_{PD}\mathscr{C}^{max} \mid {}_{L}\mathscr{W}\mathscr{A}] \supset {}_{W}\mathscr{C}^{\uparrow} \wedge {}_{HO}\mathscr{C}^{\uparrow} \wedge {}_{C}\mathscr{C}^{\uparrow}$

If system maximum passive-dependence is with respect to Leadership Subsystem affect relations; then wholeness increases, and hierarchical-order increases, and centrality increases.

73. $[{}_{S}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}] \supset {}_{CC}\mathscr{C}\mathscr{A}$

If system strongness is with respect to Leadership Subsystem affect relations; then there is complete-connectivity with respect to referent affect relations.

74. ${}_{S}\mathscr{C}\mathscr{A} \supset [{}_{V}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}]^{\downarrow}$

If system strongness is with respect to referent affect relations; then vulnerability with respect to Leadership Subsystem affect relations decreases.

75. ${}_{S}\mathscr{C}\mathscr{A} \supset [{}_{V}\mathscr{C}\mathscr{A}]^{\downarrow}$

If system strongness is with respect to referent affect relations; then vulnerability with respect to referent affect relations decreases.

76. $[{}_{S}\mathscr{C} \mid {}_{\mathscr{W}}\mathscr{A}] > \alpha \supset [{}_{CC}\mathscr{C}\mathscr{A}]^{\uparrow} \vee [{}_{S}\mathscr{C}\mathscr{A}]^{\uparrow}$

If system strongness with respect to reward affect relations is greater than some value; then complete-connectivity with respect to referent affect relations increases, or strongness with respect to referent affect relations increases.

77. $[{}_{S}\mathscr{C} \mid {}_{\mathscr{W}}\mathscr{A}] > \alpha \supset [{}_{W}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}] \wedge [{}_{HO}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}]$

If system strongness with respect to reward affect relations is greater than some value; then wholeness is with respect to Leadership Subsystem affect relations, and hierarchical-order is with respect to Leadership Subsystem affect relations.

78. $[{}_{S}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}]^{\uparrow} \wedge [{}_{HO}\mathscr{C} \mid {}_{L}\mathscr{W}\mathscr{A}]^{\downarrow} \supset [{}_{S}\mathscr{C}\mathscr{A}]^{\uparrow}$

If system strongness with respect to Leadership Subsystem affect relations increases, and hierarchical-order with respect to Leadership Subsystem affect relations decreases; then strongness with respect to referent affect relations increases.

79. $_{S}\mathcal{C}\mathcal{A} > \alpha \wedge [_{HO}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] > \beta :\supset: \quad [_{W}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}]$

If system strongness with respect to referent affect relations is greater than some value, and hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, then wholeness is with respect to Leadership Subsystem affect relations.

80. $[_{S}\mathcal{C}\mathcal{A} < \alpha] \wedge [_{C}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] :\supset: [_{W}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}]$

If system strongness with respect to referent affect relations is less than some value, and centrality is with respect to Leadership Subsystem affect relations; then wholeness is with respect to Leadership Subsystem affect relations.

81. $[_{S}\mathcal{C}\mathcal{A} < \alpha] \wedge [_{HO}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] > \beta \wedge \quad [_{C}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] :\supset: [_{CP}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}]^{\uparrow}$

If system strongness with respect to referent affect relations is less than some value, and hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, and centrality is with respect to Leadership Subsystem affect relations; then compactness with respect to Leadership Subsystem affect relations increases.

82. $_{W}\mathcal{C}\mathcal{A} \supset [_{CC}\mathcal{C}\mathcal{A}]^{\uparrow} \vee [_{S}\mathcal{C}\mathcal{A}]^{\uparrow}$

If system wholeness is with respect to referent affect relations; then complete-connectivity with respect to referent affect relations increases, or strongness with respect to referent affect relations increases.

83. $[_{HO}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] > \alpha \wedge {}_{F}\mathcal{C} \mid {}_{L}\mathcal{W}\mathcal{A}] > \beta :\supset: {}_{D}\mathcal{C}\mathcal{A}$

If system hierarchical-order with respect to Leadership Subsystem affect relations is greater than some value, and flexibility with respect to Leadership Subsystem affect relations is greater than some value; then disconnectivity is with respect to referent affect relations.

84. $_{D}\mathcal{C} > \alpha \mid {}_{\mathcal{J}}\mathcal{A}$

There is disconnectivity greater than some value with respect to instructional affect relations.

85. $_{D}\mathcal{C} > \alpha \mid {}_{Q}\mathcal{A}$

There is disconnectivity greater than some value with respect to inquiry affect relations.

86. $_{S}\mathbb{S} > \alpha \supset {}_{SR}\mathbb{S}^{\uparrow}$

If system state-steadiness is greater than some value, then strain increases.

87. $_{ST}\mathbb{S}' < \alpha \supset {}_{S}\mathbb{S}^{c}$

If system stress is less than some value, then state-steadiness is constant.

88. $_{ST}\mathbb{S}' > \alpha \supset {}_{SR}\mathbb{S}^{\uparrow}$

If system stress greater than some value increases, then strain increases.

89. $({}_{S}\mathbb{S}^{\uparrow} \equiv {}_{DT}\mathbb{S}^{\uparrow}) \wedge ({}_{S}\mathbb{S}^{\downarrow} \equiv {}_{DT}\mathbb{S}^{\downarrow})$

89a. System state-steadiness increases if and only if state-determinacy increases.

89b. System state-steadiness decreases if and only if state-determinacy decreases.

90. $T\mathcal{P}^{\uparrow} \supset {}_{C}\mathscr{C}^{\downarrow}$

If system toput increases, then centrality decreases.

91. $\mathfrak{f}_{I}^{\downarrow} \supset {}_{U}\mathscr{C}^{\downarrow}$

If system feedin decreases, then unilateralness decreases.

92. $(\mathfrak{f}_{I} < n)^{\downarrow} \supset {}_{HO}\mathscr{C}^{\downarrow}$

If system feedin less than some value decreases, then hierarchical-order decreases.

93. $\mathfrak{f}_{I}^{\downarrow} \supset \mathcal{X}^{-\uparrow}$

If system feedin decreases, then complexity-degeneration increases.

94. $\mathfrak{f}_{O} < \alpha \supset \mathcal{X}^{-\uparrow}$

If system feedout is less than some value, then complexity-degeneration increases.

95. $\mathfrak{f}_{T}^{\uparrow} \supset {}_{W}\mathscr{C} < n$

If system feedthrough increases, then weakness is less than some value.

96. $T\mathcal{P}^{\approx \min} \wedge F\mathcal{P}^{\uparrow} \supset {}_{D}\mathscr{C}^{\uparrow}$

If system toput is close to minimum and fromput increases, then disconnectivity increases.

97. $\mathfrak{f}_{I}^{\uparrow} \wedge \mathscr{c}^{\approx \min} \supset {}_{D}\mathscr{C}^{\uparrow}$

If system feedin increases and compatibility is close to minimum, then disconnectivity increases.

98. $S\mathcal{P}^{\uparrow} \wedge ({}_{\mathbb{S}}\mathscr{F}^{\downarrow} \vee {}_{\mathbb{S}}\mathscr{F}^{\downarrow}) \supset {}_{IG}\mathscr{C}^{\uparrow}$

If system storeput increases, and filtration decreases or spillage decreases; then integration increases.

99. $I_{P}^{\uparrow} \wedge S_{P} > \alpha \supset {}_{SG}\mathscr{C}_{\mathcal{A}}$

If system input increases, and storeput is greater than some value; then segregation is with respect to referent affect relations.

100. ${}_{CC}\mathscr{C}^{\uparrow} \supset \mathfrak{f}_{I}^{\uparrow}$

If system complete-connectivity increases, then feedin increases.

101. ${}_{W}\mathscr{C} > n \supset \mathfrak{f}_{T} < m$

If system weakness is greater than some value, then feedthrough is less than some value.

102. ${}_{I}\mathscr{C}^{\uparrow} \supset \mathfrak{f}_{I}^{\uparrow}$

If system interdependence increases, then feedin increases.

103. $\mathcal{W}^{\uparrow} \supset {}_{\mathbb{S}'}\mathscr{T} < n$

If system wholeness increases, then regulation is less than some value.

104. $({}_{CP}\mathcal{C} > n)^{\uparrow} \supset {}_{EF}\mathcal{S}^{\uparrow}$

If system compactness greater than some value increases, then efficiency increases.

105. ${}_{C}\mathcal{C}^{\uparrow} \supset T_{\mathcal{P}}^{\downarrow}$

If system centrality increases, then toput decreases.

106. ${}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset T_{\mathcal{P}}^{\uparrow}$

If system complete-connectivity increases or strongness increases, then toput increases.

107. ${}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset I_{\mathcal{P}}^{\uparrow}$

If system complete-connectivity increases or strongness increases, then input increases.

108. ${}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset {}_{\mathbb{S}}\mathcal{F}^{\downarrow}$

If system complete-connectivity increases or strongness increases, then filtration decreases.

109. ${}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset {}_{\mathbb{S}}\mathcal{F}^{\uparrow}$

If system complete-connectivity increases or strongness increases, then spillage increases.

110. ${}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset 0 < \Delta F_{\mathcal{P}} < \Delta I_{\mathcal{P}}$

If system complete-connectivity increases or strongness increases, then 0 is less than change in fromput, and change in fromput is less than change in input.

111. $F\ {}_{CC}\mathcal{C}^{\uparrow} \vee {}_{S}\mathcal{C}^{\uparrow} \supset \Delta S_{\mathcal{P}} > \Delta F_{\mathcal{P}}$

If system complete-connectivity increases or strongness increases, then change in storeput is greater than change in fromput.

112. ${}_{S}\mathcal{C}^{\uparrow} \wedge {}_{HO}\mathcal{C}_{c} \supset {}_{\mathbb{S}'}\mathcal{F}^{\downarrow}$

If system strongness increases and hierarchical-order is constant, then regulation decreases.

113. $\mathcal{W}^{\uparrow} \wedge {}_{HO}\mathcal{C}_{c} \supset {}_{EF}\mathcal{S}^{\downarrow}$

If system wholeness increases and hierarchical-order is constant, then efficiency decreases.

114. ${}_{W}\mathcal{C} \wedge {}_{HO}\mathcal{C} \supset {}_{F}\mathcal{C}^{\downarrow}$

If system weakness and hierarchical-order, then flexibility decreases.

115. ${}_{U}\mathcal{C}^{\uparrow} \vee {}_{W}\mathcal{C}^{\uparrow} \vee {}_{D}\mathcal{C}^{\uparrow} \supset I_{\mathcal{P}}^{\downarrow} \wedge F_{\mathcal{P}}^{\downarrow}$

If system unilateralness, or weakness increases, or disconnectivity increases; then input decreases and fromput decreases.

116. $[{}_{PD}\mathcal{C} \mid {}_{\cap\mathcal{W}}\mathcal{A}]^{\uparrow} \supset \mathfrak{f}_{O}^{\uparrow}$

If system passive-dependence with respect to reward affect relations increases, then feedout decreases.

117. $[_{PD}\mathscr{C} \mid {}_{\mathcal{W}}\mathcal{A}]^{\uparrow} \supset [_{A}\mathbb{S} > \alpha]^{\uparrow}$

If system passive-dependence with respect to reward affect relations increases, then adaptability greater than some value increases.

118. $[_{I}\mathbb{S} \mid {}_{L}\mathcal{W}_{\mathcal{A}}]^{\uparrow} \supset F_{\mathcal{P}}^{\uparrow}$

If system independence with respect to Leadership Subsystem affect relations increases, then fromput increases.

119. $[_{I}\mathbb{S} \mid {}_{L}\mathcal{W}_{\mathcal{A}}]^{\uparrow} \supset O_{\mathcal{P}} < \alpha$

If system independence with respect to Leadership Subsystem affect relations increases, then output is less than some value.

120. $[_{I}\mathbb{S} \mid {}_{L}\mathcal{W}_{\mathcal{A}}]^{\uparrow} \supset f_{O}^{\downarrow}$

If system independence with respect to Leadership Subsystem affect relations increases, then feedout decreases.

121. ${}_{W}\mathscr{C}_{\mathcal{A}} > \alpha \supset |F_{\mathcal{P}}^{max} - F_{\mathcal{P}}| > \beta$

If system wholeness with respect to referent affect relations is greater than some value, then the absolute value of the difference of fromput from maximum fromput is greater than some value.

122. ${}_{W}\mathscr{C}_{\mathcal{A}} > \alpha \supset {}_{O}\mathbb{S}^{\approx\, min}$

If system wholeness with respect to referent affect relations is greater than some value, then openness approaches minimum.

123. $[_{HO}\mathscr{C} \mid {}_{L}\mathcal{W}_{\mathcal{A}}]^{\uparrow} \supset {}_{\mathbb{S}}\mathscr{F}^{\uparrow}$

If system hierarchical-order with respect to Leadership Subsystem affect relations increases, then filtration increases.

124. $[\mathcal{X} \mid {}_{\mathcal{F}}\mathcal{A}] > \alpha \supset {}_{\mathbb{S}'}\mathscr{F} > \beta$

If system complexity with respect to facilitating affect relations is greater than some value, then regulation is greater than some value.

125. $[\mathcal{X} \mid {}_{\mathcal{F}}\mathcal{A}] > \alpha \supset [f_{T} \mid {}_{\mathcal{F}}\mathcal{A}] < \beta$

If system complexity with respect to facilitating affect relations is greater than some value, then feedthrough with respect to facilitating affect relations is less than some value.

126. $[_{PD}\mathscr{C} \mid {}_{Q}\mathcal{A}]^{\uparrow} \supset f_{O}^{\uparrow} \wedge {}_{\mathbb{S}}\mathscr{F}^{\uparrow} \wedge H^{max} > \alpha$

If system passive-dependence with respect to inquiry affect relations and legitimate affect relations increases, then feedout increases and spillage increases and maximum selective information is greater than some value.

127. $[_{PD}\mathscr{C} \mid {}_{Q\mathcal{E}}\mathcal{A}]^{\uparrow} \supset f_{O}^{\downarrow} \wedge ({}_{\mathbb{S}}\mathscr{F} > \alpha)^{\uparrow} \wedge H^{max} < \alpha$

If system passive-dependence with respect to inquiry affect relations and expert affect relations increases, then feedout decreases and spillage greater than some value increases and maximum selective information is less than some value.

128. $[_{AD}\mathscr{C} \mid {}_{\mathcal{FL}}\mathcal{A}] > \alpha \supset {}_{\mathbb{S}'}\mathscr{F} < \beta$

If system active-dependence with respect to facilitating affect relations and legitimate affect relations is greater than some value, then regulation is less than some value.

129. $[_{W}\mathscr{C} \mid {}_{\mathcal{QR}}\mathcal{A}]^{\uparrow} \supset (H^{max}/I_{\mathcal{P}})^{\uparrow}$

If system wholeness with respect to inquiry affect relations and referent affect relations increases, then the ratio of maximum selective information to input increases.

130. $[_{D}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}] > \alpha \wedge [_{CC}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}]^{\uparrow} \supset I_{\mathcal{P}}^{\uparrow} \wedge F_{\mathcal{P}}^{\uparrow} \wedge \mathfrak{f}o^{\downarrow} \wedge {}_{\mathbb{S}'}\mathscr{F}^{\uparrow}$

If system disconnectivity with respect to instructional affect relations and referent affect relations is greater than some value, and complete-connectivity with respect to instructional affect relations and referent affect relations increases, and wholeness with respect to instructional affect relations and referent affect relations increases; then input increases, fromput increases, feedout decreases, and regulation increases.

131. $[_{D}\mathscr{C} \mid {}_{\mathcal{IE}}\mathcal{A}] > \alpha \wedge [_{CC}\mathscr{C} \mid {}_{\mathcal{IE}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathscr{C} \mid {}_{\mathcal{IE}}\mathcal{A}]^{\uparrow} \supset I_{\mathcal{P}}^{\uparrow}\ S_{\mathcal{P}}^{\uparrow} \wedge \mathfrak{f}o^{\uparrow} \wedge {}_{\mathbb{S}}\mathscr{F}^{\uparrow}$

If system disconnectivity is with respect to instructional affect relations and expert affect relations is greater than some value, complete-connectivity is with respect to instructional affect relations and expert affect relations increases, and wholeness with respect to instructional affect relations and expert affect relations increases; then input increases, storeput increases, feedout increases, and filtration increases.

132. $[_{D}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}] > \alpha \wedge [_{PD}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathscr{C} \mid {}_{\mathcal{IR}}\mathcal{A}]^{\uparrow} :\supset: I_{\mathcal{P}}^{\downarrow} \wedge F_{\mathcal{P}}^{\downarrow} \wedge \mathfrak{f}o^{\downarrow} \wedge {}_{\mathbb{S}'}\mathscr{F}^{\downarrow}$

If system disconnectivity with respect to instructional affect relations and referent affect relations is greater than some value, passive-dependence with respect to instructional affect relations and referent affect relations increases, and wholeness with respect to instructional affect relations, and referent affect relations increases; then input decreases, fromput decreases, feedout decreases, and regulation decreases.

133. $[_{D}\mathscr{C} \mid {}_{\mathcal{IW}}\mathcal{A}] > \alpha \wedge [_{PD}\mathscr{C} \mid {}_{\mathcal{IW}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathscr{C} \mid {}_{\mathcal{IW}}\mathcal{A}]^{\uparrow} :\supset: \Delta\mathbb{S}' > \beta \supset {}_{A}\mathbb{S} > \gamma \wedge I_{\mathcal{P}} < \phi \wedge S_{\mathcal{P}} < \gamma \wedge {}_{\mathbb{S}}\mathscr{F} > \eta$

If system disconnectivity with respect to instructional affect relations and reward affect relations is greater than some value, passive-dependence with respect to instructional affect relations and reward affect relations increases, and wholeness with respect to instructional affect relations and reward affect relations increases; then if system environmental change is greater than some value, then adaptability is greater than some value, input is less than some value, storeput is less than some value, and filtration is greater than some value.

134. $[_{D}\mathscr{C} \mid {}_{\mathcal{IL}}\mathcal{A}] > \alpha \wedge [_{PD}\mathscr{C} \mid {}_{\mathcal{IL}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathscr{C} \mid {}_{\mathcal{IL}}\mathcal{A}]^{\uparrow} \supset \mathfrak{f}o^{\uparrow} \wedge {}_{\mathbb{S}}\mathscr{F} > \beta \wedge {}_{\mathbb{S}'}\mathscr{F} > \gamma$

If system disconnectivity with respect to instructional affect relations and legitimate affect relations is greater than some value, passive-dependence with respect to instructional affect relations and legitimate affect relations increases, and wholeness with respect to instructional affect relations and legitimate affect relations increases; then feedout increases, spillage is greater than some value, and regulation is greater than some value.

135. $[_{D}\mathcal{C}\,|_{\mathcal{IP}}\mathcal{A}] > \alpha \wedge [_{PD}\mathcal{C}\,|\,_{\mathcal{IP}}\mathcal{A}]^{\uparrow} \wedge [_{W}\mathcal{C}|\,_{\mathcal{IP}}\mathcal{A}]^{\uparrow} \wedge {}_{HO}\mathcal{C}\,|\,_{\mathcal{IP}}\mathcal{A}]^{\uparrow} :\supset: \Delta\mathbb{S}' > \beta \supset {}_{A}\mathbb{S} < \gamma \wedge F\mathcal{P}^{\downarrow} \wedge fO^{\downarrow} \wedge {}_{\mathbb{S}'}\mathcal{F}^{\downarrow} \wedge {}_{SB}\mathbb{S}^{\uparrow} \wedge {}_{EQ}\mathbb{S}^{\uparrow}$

If system disconnectivity with respect to instructional affect relations and punishment affect relations is greater than some value, passive-dependence with respect to instructional affect relations and punishment affect relations increases, wholeness with respect to instructional affect relations and punishment affect relations increases, and hierarchical-order with respect to instructional affect relations and punishment affect relations increases; then if system environmental change is greater than some value, then adaptability is less than some value, fromput decreases, feedout decreases, regulation decreases, stability increases, and equifinality increases.

136. $[_{AD}\mathcal{C}^{max}\,|_{\mathcal{DL}}\mathcal{A}] \supset F\mathcal{P} < \alpha \wedge {}_{\mathbb{S}}\mathcal{F}^{\uparrow} \wedge {}_{\mathbb{S}}\mathcal{F}^{\uparrow} \wedge {}_{\mathbb{S}'}\mathcal{F} < \beta \wedge [_{AD}\mathcal{C}\,|\,_{Q}\mathcal{A}]^{\downarrow} \wedge [_{AD}\mathcal{C}\,|\,_{Q}\mathcal{A}]^{\uparrow}$

If system maximum active dependence with respect to development inquiry affect relations and legitimate affect relations; then fromput is less than some value, filtration increases, spillage increases, regulation is less than some value, active-dependence with respect to inquiry affect relations decreases, and active-dependence with respect to instructional affect relations increases.

137. $fO > n \wedge \boldsymbol{c} < m \supset {}_{SG}\mathcal{C} < p$

If system feedout is greater than some value and compatibility is less than some value, then segregation is less than some value.

138. $T\mathcal{P}^{\uparrow} \wedge ({}_{CP}\mathcal{C} > n)^{\uparrow} \supset {}_{\mathbb{S}'}\mathcal{F}^{\uparrow}$

If system toput increases and compactness greater than some value increases, then regulation increases.

139. $T\mathcal{P}^{\uparrow}\wedge(({}_{CP}\mathcal{C}>n)^{\downarrow}\vee({}_{CP}\mathcal{C}>n)_{c}) \supset {}_{EF}\boldsymbol{\mathcal{S}}^{\downarrow}$

If system toput increases and compactness greater than some value decreases, then efficiency decreases.

140. $(F\mathcal{P}_{c} \vee F\mathcal{P}^{\downarrow}) \wedge {}_{CC}\mathcal{C}^{\uparrow} \wedge {}_{S}\mathcal{C}^{\uparrow} \supset fT^{\downarrow}$

If system fromput is constant or decreases, complete-connectivity increases, and strongness increases; then feedthrough decreases.

141. $T\mathcal{P}^{\uparrow} \wedge [_{I}\mathbb{S}\,|\,_{L}\mathcal{WA}]^{\uparrow} \supset fO^{\uparrow}$

If system toput increases, and independence with respect to Leadership Subsystem affect relations increases; then feedout increases.

142. $fB > \alpha \wedge [_{PD}\mathcal{C}\,|\,_{\mathcal{P}}\mathcal{A}] \wedge {}_{AD}\mathcal{C} > \beta \supset {}_{EF}\boldsymbol{\mathcal{S}} > \gamma$

If system feedback is greater than some value, passive-dependence is with respect to punishment affect relations, and active-dependence is greater than some value; then efficiency is greater than some value.

143. $fI^{c} \supset {}_{H}\mathbb{S} < \alpha$

If system feedin is constant, then homeostasis is less than some value.

144. $_{\mathbb{S}}\mathscr{F}^{\downarrow} \supset \mathscr{I}^{\uparrow}$

If system filtration decreases, then isomorphism increases.

145. $_{\mathbb{S}}\mathscr{F} > \alpha \supset {}_{SB}\mathbb{S} > \beta$

If system filtration is greater than some value, then stability is greater than some value.

146. $_{A}\mathbb{S} > \alpha \supset {}_{SB}\mathbb{S}^{\downarrow}$

If system adaptability is greater than some value, then stability decreases.

147. $T_{\mathcal{P}}^{\uparrow} \wedge f_{O}^{\approx \min} \supset {}_{ST}\mathbb{S}'^{\uparrow}$

If system toput increases and feedout approaches minimum, then stress increases.

148. $(\Delta\mathbb{S}'>\alpha) \wedge (f_{T}\leq\beta) \wedge (f_{B}>\gamma) \supset ({}_{SB}\mathbb{S}<\gamma)$

If system environmental change is greater than some value, feedthrough is constant or less than some value, and feedback is greater than some value, then stability is less than some value.

149. $[{}_{\mathbb{S}}\mathscr{F} \mid {}_{\mathscr{J}}\mathcal{A}]^{\uparrow} \supset [\mathscr{I} \mid {}_{\mathscr{J}}\mathcal{A}]^{\uparrow}$

If system filtration with respect to instructional affect relations increases, then isomorphism with respect to instructional affect relations increases.

150. $\mathscr{A}^{\uparrow} \supset I_{\mathcal{P}}^{\uparrow} \wedge S_{\mathcal{P}}^{\uparrow} \wedge F_{\mathcal{P}}^{\downarrow} \wedge f_{O}^{\downarrow} \wedge {}_{\mathbb{S}}\mathscr{F}^{\downarrow} \wedge {}_{\mathbb{S}}\mathscr{F}^{\downarrow} \wedge {}_{EF}\boldsymbol{\mathcal{S}}^{\downarrow}$

If system automorphism increases; then input increases, storeput increases, fromput decreases, feedout decreases, filtration decreases, spillage decreases, and efficiency decreases.

151. $\mathscr{I}^{\uparrow} \supset F_{\mathcal{P}}^{\downarrow} \wedge f_{O}^{\downarrow}$

If system isomorphism increases; then fromput decreases, and feedout decreases.

152. $_{S}\mathbb{S} > \alpha \supset {}_{A}\mathbb{S} < \beta$

If system state-steadiness is greater than some value, then adaptability is less than some value.

153. $_{DT}\mathbb{S}^{\uparrow} \supset {}_{\mathbb{S}'}\mathscr{F}^{\downarrow}$

If system state-determinacy increases, then regulation decreases.

154. $_{DT}\mathbb{S}^{\uparrow} \supset H^{\downarrow}$

If system state-determinacy increases, then selective information decreases.

155. $_{EQ}\mathbb{S} > \alpha \supset {}_{\mathbb{S}'}\mathscr{F} < \beta$

If system equifinality is greater than some value, then regulation is less than some value.

156. $_{EQ}\mathbb{S}_{t} \wedge {}_{H}\mathbb{S} > \alpha \supset {}_{\mathbb{S}'}\mathscr{F} < \beta$

If system equifinality is at a given time, and homeostasis is greater than some value; then regulation is less than some value.

157. $[\mathscr{I} |_{\mathcal{J}} \mathcal{A}]^{\uparrow} \supset \mathrm{F}_{\mathcal{P}}^{\downarrow} \wedge \mathfrak{f}_{\mathrm{O}}^{\downarrow}$

If system isomorphism with respect to instructional affect relations increases; then fromput decreases, and feedout decreases.

158. $\mathrm{T}_{\mathcal{P}}^{\uparrow} \wedge \mathcal{Z}_{\mathrm{c}} \supset \mathfrak{f}_{\mathrm{B}}^{\uparrow}$

If system toput increases, and size is constant; then feedback increases.

159. $[\Delta\mathbb{S}' > \alpha] \wedge [\mathscr{C} > \beta] \wedge [_{\mathrm{SB}}\mathbb{S} > \gamma] \supset [\mathrm{S}_{\mathcal{P}} > \zeta] \vee [_{\mathbb{S}}\mathscr{F} > \eta] \vee [_{\mathbb{S}}\mathscr{F} > \theta]$

If system environmental change is greater than some value, compatibility is greater than some value, and stability is greater than some value; then storeput is greater than some value, or filtration is greater than some value, or spillage is greater than some value.

160. $\mathrm{T}_{\mathcal{P}}^{\uparrow} \wedge \mathrm{F}_{\mathcal{P}}^{\uparrow} \wedge \mathcal{Z}_{\mathrm{c}} \supset \mathfrak{f}_{\mathrm{O}}^{\uparrow}$

If system toput increases, fromput increases, and size is constant; then feedout increases.

161. $\mathrm{O}_{\mathcal{P}\mathrm{c}} \wedge \mathscr{A}^{\downarrow} \wedge \mathscr{M} > \mathrm{n} \supset \mathfrak{f}_{\mathrm{O}}^{\downarrow}$

If system output is constant, automorphism decreases, and homomorphism is greater than some value; then feedout decreases.

162. $\mathrm{T}_{\mathcal{P}} < \alpha \wedge \mathfrak{f}_{\mathrm{I}}^{\uparrow} \wedge {}_{\mathrm{SB}}\mathbb{S} < \beta \supset {}_{\mathrm{SB}}\mathbb{S}^{\uparrow}$

If system toput is less than some value, feedin increases, and stability is less than some value; then stability increases.

163. $\mathrm{T}_{\mathcal{P}} > \alpha \wedge \mathfrak{f}_{\mathrm{I}}^{\downarrow} \wedge {}_{\mathrm{SB}}\mathbb{S} < \beta \supset {}_{\mathrm{SB}}\mathbb{S}^{\uparrow}$

If system toput is greater than some value, feedin decreases, and stability is less than some value; then stability increases.

164. ${}_{\mathrm{I}}\mathscr{C}^{\uparrow} \supset {}_{\mathrm{SB}}\mathbb{S} < \mathrm{n}$

If system independence increases, then stability is less than some value.

165. ${}_{\mathrm{F}}\mathscr{C}^{\downarrow} \supset {}_{\mathrm{D}}\mathcal{S}^{\uparrow}$

If system flexibility decreases, then state-determinacy increases.

166. ${}_{\mathrm{C}}\mathscr{C}^{\uparrow} \supset {}_{\mathrm{S}}\mathcal{S}^{\uparrow}$

If system centrality increases, then state-steadiness increases.

167. $(\mathcal{X}^{+} > \mathrm{n})^{\uparrow} \supset \mathcal{Z}^{\uparrow}$

If system complexity greater than some value increases, then size increases.

168. ${}_{\mathrm{I}}\mathscr{C}^{\uparrow} \wedge \mathcal{W}^{\uparrow} \supset {}_{\mathrm{S}}\mathcal{S} > \mathrm{n}$

If system independence increases, and wholeness increases; then state-steadiness is greater than some value.

169. $\mathcal{W} > n \wedge {}_{C}\mathcal{C} > m \supset {}_{D}\mathcal{S} > p$

If system wholeness is greater than some value, and centrality is greater than some value; then state-determinacy is greater than some value.

170. $[{}_{C}\mathcal{C} \mid {}_{\mathcal{I}}\mathcal{A}]^{\uparrow} \supset [\mathcal{I} \mid {}_{\mathcal{I}}\mathcal{A}]^{\uparrow}$

If system centrality with respect to instructional affect relations increases, then isomorphism with respect to instructional affect relations increases.

171. $[{}_{D}\mathcal{C} \mid {}_{\mathcal{F}}\mathcal{A}] > \alpha \wedge [{}_{W}\mathcal{C} \mid {}_{\mathcal{F}}\mathcal{A}] < \beta \supset [{}_{DT}\mathbb{S} \mid {}_{\mathcal{F}}\mathcal{A}] < \gamma]$

If system disconnectivity with respect to facilitating affect relations is greater than some value, and wholeness with respect to facilitating affect relations is less than some value; then state-determinacy with respect to facilitating affect relations is less than some value.

172. $\mathcal{A}^{\uparrow} \supset \mathcal{W}^{\downarrow}$

If system automorphism increases, then wholeness decreases.

173. $\mathcal{A}^{\uparrow} \supset {}_{C}\mathcal{C}^{\downarrow}$

If system automorphism increases, then centrality decreases.

174. $\Delta\mathcal{Z} > \Delta_{HO}\mathcal{C}$

Change in system size is greater than change in hierarchical-order.

175. $\mathcal{X}^{-\uparrow} \supset \mathcal{Z}^{-\uparrow} \vee {}_{D}\mathcal{C}^{\uparrow}$

If system complexity-degeneration increases; then size-degeneration increases, or disconnectivity increases.

176. ${}_{S}\mathcal{S} < n \supset {}_{SG}\mathcal{C} < m \wedge {}_{IG}\mathcal{C} < p \wedge {}_{H}\mathbb{S} < r$

If system state-steadiness is less than some value; then segregation is less than some value, integration is less than some value, and homeostasis is less than some value.

177. ${}_{W}\mathcal{C}^{\max} \wedge \mathcal{Z}^{\uparrow} \supset {}_{PD}\mathcal{C}^{\uparrow} \vee {}_{AD}\mathcal{C}^{\uparrow}$

If system weakness is maximum and size increases; then passive-dependence increases, or active-dependence increases.

178. ${}_{HO}\mathcal{C}(t_1) > n \wedge \mathcal{Z}(t_1) > m \supset {}_{I}\mathcal{C}(t_2)^{\uparrow}$

If system hierarchical-order at a given time is greater than some value, and size at the given time is greater than some value; then independence at a later time increases.

179. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset {}_{V}\mathcal{C}^{\uparrow}$

If system size increases, and complexity-growth is constant; then vulnerability increases.

180. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset {}_{F}\mathcal{C}^{\downarrow}$

If system size increases, and complexity-growth is constant; then flexibility decreases.

181. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset {}_{C}\mathcal{C}^{\downarrow}$

If system size increases, and complexity-growth is constant; then centrality decreases.

182. $\mathcal{Z}_{c} \wedge \mathcal{X}^{-\uparrow} \supset {}_{D}\mathcal{C}^{\uparrow}$

If system size is constant, and complexity-degeneration increases; then disconnectivity increases.

183. $\mathcal{Z}^{\downarrow} \wedge \mathcal{X}^{-\uparrow} \supset {}_{D}\mathcal{C}^{\downarrow}$ Not Valid.

If system size decreases, and complexity-degeneration increases; then disconnectivity decreases.

184. $\mathcal{X}^{\uparrow} \wedge \mathcal{Z}^{+}{}_{c} \supset {}_{CP}\mathcal{C}^{\downarrow}$

If system complexity increases, and size-growth is constant; then compactness decreases.

185. $\mathcal{X}^{\uparrow} \wedge \mathcal{Z}^{+}{}_{c} \supset {}_{C}\mathcal{C}^{\uparrow}$

If system complexity increases, and size-growth is constant; then centrality increases.

186. $\mathcal{X}^{\uparrow} \wedge {}_{ST}\mathbb{S}' > n \supset {}_{SB}\mathbb{S}^{\downarrow}$

If system centrality increases, and stress is greater than some value; then stability decreases.

187. ${}_{ST}\mathbb{S}' = 0 \wedge {}_{C}\mathcal{C}^{\uparrow} \supset {}_{SB}\mathbb{S}^{\uparrow}$

If system stress is equal to 0, and centrality increases; then stability increases.

188. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset {}_{D}\mathcal{S}^{\uparrow}$

If system size increases and complexity-growth is constant; then state-determinacy increases.

189. $[{}_{AD}\mathcal{C}^{max} \mid {}_{\mathcal{SL}}\mathcal{A}] \supset \mathrm{I}_{\mathcal{P}}{}^{\uparrow} \wedge \mathrm{F}_{\mathcal{P}}{}^{\uparrow} \wedge \mathrm{S}_{\mathcal{P}}{}^{\uparrow} \wedge {}_{\mathbb{S}}\mathcal{F}^{\uparrow} \wedge [\underline{\mathcal{A}} \mid {}_{\mathcal{J}}\mathcal{A}]^{\uparrow}$

If system maximum active-dependence is with respect to research inquiry affect relations and legitimate affect relations; then input increases, fromput increases, storeput increases, filtration increases, and automorphism with respect to instructional affect relations increases.

190. $\underline{\mathcal{M}}(t_2) > \underline{\mathcal{M}}(t_1) :\supset: \mathrm{T}_{\mathcal{P}}{}^{\approx\, max} \wedge \mathcal{Z}^{-\approx\, max} \wedge \mathcal{X}^{-\approx\, max}$

If system homomorphism at time 2 is greater than homomorphism at time 1; then toput approaches maximum, size-degeneration approaches maximum, and complexity-degeneration approaches maximum.

191. ${}_{EF}\mathcal{S} > n \wedge {}_{CP}\mathcal{C} > m \supset {}_{D}\mathcal{S} > p$

If system efficiency is greater than some value, and compactness is greater than some value; then state-determinacy is greater than some value.

192. $\mathcal{Z}^{+\downarrow} \wedge \mathrm{H}^{+c} \supset \mathcal{X}^{+\uparrow}$

If system size-growth decreases, and selective information-growth is constant; then complexity-growth increases.

193. $\mathcal{Z}^{-\downarrow} \wedge \mathrm{H}^{+c} \supset \mathcal{X}^{-\uparrow}$

If system size-degeneration decreases, and selective information-growth is constant; then complexity-degeneration increases.

194. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \mathrm{T}_{\mathcal{P}}{}^{\uparrow}$

If system size increases, and complexity-growth is constant; then toput increases.

195. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \oint_{I}{}^{\downarrow}$

If system size increases, and complexity-growth is constant; then feedin decreases.

196. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \oint_{O}{}^{\uparrow} \wedge \Delta\oint_{O}{}^{\downarrow}$

If system size increases, and complexity-growth is constant; then feedout increases, and change in feedout decreases.

197. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \oint_{T}{}^{\uparrow}$

If system size increases, and complexity-growth is constant; then feedthrough increases.

198. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \oint_{B}{}^{\downarrow}$

If system size increases, and complexity-growth is constant; then feedback decreases.

199. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \varphi({}_{R}\boldsymbol{\mathcal{R}}^{\uparrow})^{max} = n_{t(1)} \wedge \varphi({}_{\mathbb{S}'}\mathcal{F}^{\downarrow})^{min} = m_{t(2)} \wedge m < n;$
where φ is a measure of ${}_{\mathbb{S}'}\mathcal{F}$.

If system size increases, and complexity-growth is constant; then regulation increases to some value and then decreases.

200. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \mathscr{C}^{\downarrow}$

If system size increases, and complexity-growth is constant; then compatibility decreases.

201. $\mathcal{Z}^{\uparrow} \wedge \mathcal{X}^{+}{}_{c} \supset \phi({}_{EF}\boldsymbol{\mathcal{S}}^{\uparrow})^{max} = n_{t(1)} \wedge \phi({}_{EF}\boldsymbol{\mathcal{S}}^{\downarrow})^{min} = m_{t(2)} \wedge m< n;$
where ϕ is a measure of ${}_{EF}\boldsymbol{\mathcal{S}}$.

If system size increases, and complexity-growth is constant; then efficiency increases to some value and then decreases.