

Pariser Modelle zur Grundlegung einer ontischen Kategorientheorie XCVII

1. Meine „Grammatik der Stadt Paris“, erschienen als Publikation des von mir seit 2001 geleiteten „Semiotisch-Technischen Laboratoriums“ (Toth 2016a), stellte in 2 Bänden auf insgesamt 507 Seiten zum ersten Mal eine Grammatik dar, deren Elemente nicht Laute, Silben, Wörter und Sätze (sowie allenfalls Texte), sondern Häuser, Straßen, Plätze und Einfriedungen und deren Materialien nicht Phoneme oder Grapheme, sondern Stein, Holz, Glas u.a. sind. Es handelt sich dabei jedoch keineswegs um die satzsaftig bekannte und unwissenschaftliche strukturalistische (sowie mittlerweile längst überholte) Vorstellung des „Lesens einer Stadt“ bzw. der „Stadt als Text“, sondern um eine funktionale bzw. abbildungstheoretische Beschreibung einer Stadt, basierend auf invarianten ontischen Eigenschaften (vgl. Toth 2013) sowie auf invarianten ontischen Relationen (vgl. Toth 2016b). Die im folgenden verwendeten Zeichen für Morphismen, Operatoren usw. sind in den referierten Arbeiten definiert. Für alle in den „Pariser Modellen“ vorausgesetzten theoretischen Grundlagen sei auf Toth (2017) verwiesen.

2. Das vollständige System funktionaler ontischer Morphismen

2.1. C-Morphismen

2.1.1. $\alpha_C = f(S^*)$

$$\begin{aligned}(\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(S) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(U) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(E)\end{aligned}$$

2.1.2. $\alpha_C = f(B)$

$$\begin{aligned}(\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Sys}) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Abb}) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Rep})\end{aligned}$$

2.1.3. $\alpha_C = f(R^*)$

$$\begin{aligned}(\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Ad}) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Adj}) \\ (\alpha_C = (X_\lambda \rightarrow Y_Z)) &= f(\text{Ex})\end{aligned}$$

2.1.4. $\beta_C = f(S^*)$

$$\begin{aligned}(\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(S) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(U) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(E)\end{aligned}$$

2.1.5. $\beta_C = f(B)$

$$\begin{aligned}(\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Sys}) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Abb}) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Rep})\end{aligned}$$

2.1.6. $\beta_C = f(R^*)$

$$\begin{aligned}(\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Ad}) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Adj}) \\ (\beta_C = (Y_Z \rightarrow Z_\rho)) &= f(\text{Ex})\end{aligned}$$

2.1.7. $\beta\alpha_C = f(S^*)$

$$\begin{aligned}(\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(S) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(U) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(E)\end{aligned}$$

2.1.8. $\beta\alpha_C = f(B)$

$$\begin{aligned}(\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Sys}) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Abb}) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Rep})\end{aligned}$$

2.1.9. $\beta\alpha_C = f(R^*)$

$$\begin{aligned}(\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Ad}) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Adj}) \\ (\beta\alpha_C = (X_\lambda \rightarrow Z_\rho)) &= f(\text{Ex})\end{aligned}$$

2.1.10. $\alpha^\circ_C = f(S^*)$

$$\begin{aligned}(\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(S) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(U) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(E)\end{aligned}$$

2.1.11. $\alpha^\circ_C = f(B)$

$$\begin{aligned}(\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Sys}) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Abb}) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Rep})\end{aligned}$$

2.1.12. $\alpha^\circ_C = f(R^*)$

$$\begin{aligned}(\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Ad}) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Adj}) \\ (\alpha^\circ_C = (Y_Z \rightarrow X_\lambda)) &= f(\text{Ex})\end{aligned}$$

2.1.13. $\beta^\circ_C = f(S^*)$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(S)$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(U)$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(E)$$

2.1.14. $\beta^\circ_C = f(B)$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Sys})$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Abb})$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Rep})$$

2.1.15. $\beta^\circ_C = f(R^*)$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Ad})$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Adj})$$

$$(\beta^\circ_C = (Z_\rho \rightarrow Y_Z)) = f(\text{Ex})$$

2.1.16. $\alpha^\circ \beta^\circ_C = f(S^*)$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(S)$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(U)$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(E)$$

2.1.17. $\alpha^\circ \beta^\circ_C = f(B)$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Sys})$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Abb})$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Rep})$$

2.1.18. $\alpha^\circ \beta^\circ_C = f(R^*)$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Ad})$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Adj})$$

$$(\alpha^\circ \beta^\circ_C = (Z_\rho \rightarrow X_\lambda)) = f(\text{Ex})$$

2.1.19. $\text{id}_C = f(S^*)$

$$(\text{id}_{C\lambda} = (X_\lambda \rightarrow X_\lambda)) = f(S)$$

$$(\text{id}_{CZ} = (Y_Z \rightarrow Y_Z)) = f(U)$$

$$(\text{id}_{C\rho} = (Z_\rho \rightarrow Z_\rho)) = f(E)$$

2.1.20. $\text{id}_C = f(B)$

$$(\text{id}_{C\lambda} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Sys})$$

$$(\text{id}_{CZ} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Abb})$$

$$(\text{id}_{C\rho} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Rep})$$

2.1.21. $\text{id}_C = f(R^*)$

$$(\text{id}_{C\lambda} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Ad})$$

$$(\text{id}_{CZ} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Adj})$$

$$(\text{id}_{C\rho} = (X_\lambda \rightarrow X_\lambda)) = f(\text{Ex})$$

2.2. L-Morphismen**2.2.1. $\alpha_L = f(S^*)$**

$$(\alpha_L = (Ex \rightarrow Ad)) = f(S)$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(U)$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(E)$$

2.2.2. $\alpha_L = f(B)$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Sys})$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Abb})$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Rep})$$

2.2.3. $\alpha_L = f(R^*)$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Ad})$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Adj})$$

$$(\alpha_L = (Ex \rightarrow Ad)) = f(\text{Ex})$$

2.2.4. $\beta_L = f(S^*)$

$$(\beta_L = (Ad \rightarrow In)) = f(S)$$

$$(\beta_L = (Ad \rightarrow In)) = f(U)$$

$$(\beta_L = (Ad \rightarrow In)) = f(E)$$

2.2.5. $\beta_L = f(B)$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Sys})$$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Abb})$$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Rep})$$

2.2.6. $\beta_L = f(R^*)$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Ad})$$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Adj})$$

$$(\beta_L = (Ad \rightarrow In)) = f(\text{Ex})$$

2.2.7. $\beta\alpha_L = f(S^*)$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(S)$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(U)$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(E)$$

2.2.8. $\beta\alpha_L = f(B)$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Sys})$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Abb})$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Rep})$$

2.2.9. $\beta\alpha_L = f(R^*)$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Ad})$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Adj})$$

$$(\beta\alpha_L = (Ex \rightarrow In)) = f(\text{Ex})$$

2.2.10. $\alpha^\circ_L = f(S^*)$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(S)$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(U)$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(E)$$

2.2.11. $\alpha^\circ_L = f(B)$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Sys})$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Abb})$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Rep})$$

2.2.12. $\alpha^\circ_L = f(R^*)$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Ad})$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Adj})$$

$$(\alpha^\circ_L = (Ad \rightarrow Ex)) = f(\text{Ex})$$

2.2.13. $\beta^\circ_L = f(S^*)$ **2.2.14. $\beta^\circ_L = f(B)$** **2.2.15. $\beta^\circ_L = f(R^*)$**

$$\begin{aligned}(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(S) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(U) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(E)\end{aligned}$$

$$\mathbf{2.2.16. \alpha^{\circ}\beta^{\circ}_L = f(S^*)}$$

$$\begin{aligned}(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(S) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(U) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(E)\end{aligned}$$

$$\mathbf{2.2.19. id_L = f(S^*)}$$

$$\begin{aligned}(id_{LEx} = (\text{Ex} \rightarrow \text{Ex})) &= f(S) \\(id_{LAd} = (\text{Ad} \rightarrow \text{Ad})) &= f(U) \\(id_{LIn} = (\text{In} \rightarrow \text{In})) &= f(E)\end{aligned}$$

2.3. O-Morphisms

$$\mathbf{2.3.1. \alpha_O = f(S^*)}$$

$$\begin{aligned}(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(S) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(U) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(E)\end{aligned}$$

$$\mathbf{2.3.4. \beta_O = f(S^*)}$$

$$\begin{aligned}(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(S) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(U) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(E)\end{aligned}$$

$$\mathbf{2.3.7. \beta\alpha_O = f(S^*)}$$

$$\begin{aligned}(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(S) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(U) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(E)\end{aligned}$$

$$\mathbf{2.3.10. \alpha^{\circ}_O = f(S^*)}$$

$$\begin{aligned}(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(S) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(U) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(E)\end{aligned}$$

$$\mathbf{2.3.13. \beta^{\circ}_O = f(S^*)}$$

$$\begin{aligned}(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Sys}) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Abb}) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.2.17. \alpha^{\circ}\beta^{\circ}_L = f(B)}$$

$$\begin{aligned}(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Sys}) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Abb}) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.2.20. id_L = f(B)}$$

$$\begin{aligned}(id_{LEx} = (\text{Ex} \rightarrow \text{Ex})) &= f(\text{Sys}) \\(id_{LAd} = (\text{Ad} \rightarrow \text{Ad})) &= f(\text{Abb}) \\(id_{LIn} = (\text{In} \rightarrow \text{In})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.3.2. \alpha_O = f(B)}$$

$$\begin{aligned}(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Sys}) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Abb}) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.3.5. \beta_O = f(B)}$$

$$\begin{aligned}(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Sys}) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Abb}) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.3.8. \beta\alpha_O = f(B)}$$

$$\begin{aligned}(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Sys}) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Abb}) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.3.11. \alpha^{\circ}_O = f(B)}$$

$$\begin{aligned}(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Sys}) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Abb}) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Rep})\end{aligned}$$

$$\mathbf{2.3.14. \beta^{\circ}_O = f(B)}$$

$$\begin{aligned}(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Ad}) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Adj}) \\(\beta^{\circ}_L = (\text{In} \rightarrow \text{Ad})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.2.18. \alpha^{\circ}\beta^{\circ}_L = f(R^*)}$$

$$\begin{aligned}(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Ad}) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Adj}) \\(\alpha^{\circ}\beta^{\circ}_L = (\text{In} \rightarrow \text{Ex})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.2.21. id_L = f(R^*)}$$

$$\begin{aligned}(id_{LEx} = (\text{Ex} \rightarrow \text{Ex})) &= f(\text{Ad}) \\(id_{LAd} = (\text{Ad} \rightarrow \text{Ad})) &= f(\text{Adj}) \\(id_{LIn} = (\text{In} \rightarrow \text{In})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.3.3. \alpha_O = f(R^*)}$$

$$\begin{aligned}(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Ad}) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Adj}) \\(\alpha_O = (\text{Sub} \rightarrow \text{Koo})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.3.6. \beta_O = f(R^*)}$$

$$\begin{aligned}(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Ad}) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Adj}) \\(\beta_O = (\text{Koo} \rightarrow \text{Sup})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.3.9. \beta\alpha_O = f(R^*)}$$

$$\begin{aligned}(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Ad}) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Adj}) \\(\beta\alpha_O = (\text{Sub} \rightarrow \text{Sup})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.3.12. \alpha^{\circ}_O = f(R^*)}$$

$$\begin{aligned}(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Ad}) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Adj}) \\(\alpha^{\circ}_O = (\text{Koo} \rightarrow \text{Sub})) &= f(\text{Ex})\end{aligned}$$

$$\mathbf{2.3.15. \beta^{\circ}_O = f(R^*)}$$

$$\begin{array}{lll}
(\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(S) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Sys}) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Ad}) \\
(\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(U) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Abb}) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Adj}) \\
(\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(E) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Rep}) & (\beta^\circ_O = (\text{Sup} \rightarrow \text{Koo})) = f(\text{Ex})
\end{array}$$

2.3.16. $\alpha^\circ \beta^\circ_O = f(S^*)$

2.3.17. $\alpha^\circ \beta^\circ_O = f(B)$

2.3.18. $\alpha^\circ \beta^\circ_O = f(R^*)$

$$\begin{array}{lll}
(\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(S) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Sys}) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Ad}) \\
(\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(U) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Abb}) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Adj}) \\
(\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(E) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Rep}) & (\alpha^\circ \beta^\circ_O = (\text{Sup} \rightarrow \text{Sub})) = f(\text{Ex})
\end{array}$$

2.3.19. $\text{id}_O = f(S^*)$

2.3.20. $\text{id}_O = f(B)$

2.3.21. $\text{id}_O = f(R^*)$

$$\begin{array}{lll}
(\text{id}_{O_{\text{Sub}}} = (\text{Sub} \rightarrow \text{Sub})) = f(S) & (\text{id}_{O_{\text{Sub}}} = (\text{Sub} \rightarrow \text{Sub})) = f(\text{Sys}) & (\text{id}_{O_{\text{Sub}}} = (\text{Sub} \rightarrow \text{Sub})) = f(\text{Ad}) \\
(\text{id}_{O_{\text{Koo}}} = (\text{Koo} \rightarrow \text{Koo})) = f(U) & (\text{id}_{O_{\text{Koo}}} = (\text{Koo} \rightarrow \text{Koo})) = f(\text{Abb}) & (\text{id}_{O_{\text{Koo}}} = (\text{Koo} \rightarrow \text{Koo})) = f(\text{Adj}) \\
(\text{id}_{O_{\text{Sup}}} = (\text{Sup} \rightarrow \text{Sup})) = f(E) & (\text{id}_{O_{\text{Sup}}} = (\text{Sup} \rightarrow \text{Sup})) = f(\text{Rep}) & (\text{id}_{O_{\text{Sup}}} = (\text{Sup} \rightarrow \text{Sup})) = f(\text{Ex})
\end{array}$$

2.4. Q-Morphisms

2.4.1. $\alpha_Q = f(S^*)$

2.4.2. $\alpha_Q = f(B)$

2.4.3. $\alpha_Q = f(R^*)$

$$\begin{array}{lll}
(\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(S) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Sys}) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Ad}) \\
(\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(U) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Abb}) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Adj}) \\
(\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(E) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Rep}) & (\alpha_Q = (\text{Adj} \rightarrow \text{Subj})) = f(\text{Ex})
\end{array}$$

2.4.4. $\beta_Q = f(S^*)$

2.4.5. $\beta_Q = f(B)$

2.4.6. $\beta_Q = f(R^*)$

$$\begin{array}{lll}
(\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(S) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Sys}) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Ad}) \\
(\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(U) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Abb}) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Adj}) \\
(\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(E) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Rep}) & (\beta_Q = (\text{Subj} \rightarrow \text{Transj})) = f(\text{Ex})
\end{array}$$

2.4.7. $\beta \alpha_Q = f(S^*)$

2.4.8. $\beta \alpha_Q = f(B)$

2.4.9. $\beta \alpha_Q = f(R^*)$

$$\begin{array}{lll}
(\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(S) & (\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Sys}) & (\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Ad}) \\
(\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(U) & (\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Abb}) & (\beta \alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Adj})
\end{array}$$

$$(\beta\alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(E) \quad (\beta\alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Rep}) \quad (\beta\alpha_Q = (\text{Adj} \rightarrow \text{Transj})) = f(\text{Ex})$$

$$2.4.10. \alpha^\circ Q = f(S^*)$$

$$2.4.11. \alpha^\circ Q = f(B)$$

$$2.4.12. \alpha^\circ Q = f(R^*)$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(S)$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(\text{Sys})$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow V)) = f(\text{Ad})$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(U)$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(\text{Abb})$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(\text{Adj})$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(E)$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(\text{Rep})$$

$$(\alpha^\circ Q = (\text{Subj} \rightarrow \text{Adj})) = f(\text{Ex})$$

$$2.4.13. \beta^\circ Q = f(S^*)$$

$$2.4.14. \beta^\circ Q = f(B)$$

$$2.4.15. \beta^\circ Q = f(R^*)$$

$$(\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(S) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Sys}) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Ad})$$

$$(\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(U) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Abb}) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Adj})$$

$$(\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(E) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Rep}) \quad (\beta^\circ Q = (\text{Transj} \rightarrow \text{Subj})) = f(\text{Ex})$$

$$2.4.16. \alpha^\circ \beta^\circ Q = f(S^*)$$

$$2.4.17. \alpha^\circ \beta^\circ Q = f(B)$$

$$2.4.18. \alpha^\circ \beta^\circ Q = f(R^*)$$

$$(\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(S) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Sys}) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Ad})$$

$$(\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(U) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Abb}) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Adj})$$

$$(\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(E) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Rep}) \quad (\alpha^\circ \beta^\circ Q = (\text{Transj} \rightarrow \text{Adj})) = f(\text{Ex})$$

$$2.4.19. \text{id}_Q = f(S^*)$$

$$2.4.20. \text{id}_Q = f(B)$$

$$2.4.21. \text{id}_Q = f(R^*)$$

$$(\text{id}_{Q\text{Adj}} = (\text{Adj} \rightarrow \text{Adj})) = f(S) \quad (\text{id}_{Q\text{Adj}} = (\text{Adj} \rightarrow \text{Adj})) = f(\text{Sys}) \quad (\text{id}_{Q\text{Adj}} = (\text{Adj} \rightarrow \text{Adj})) = f(\text{Ad})$$

$$(\text{id}_{Q\text{Subj}} = (\text{Subj} \rightarrow \text{Subj})) = f(U) \quad (\text{id}_{Q\text{Subj}} = (\text{Subj} \rightarrow \text{Subj})) = f(\text{Abb}) \quad (\text{id}_{Q\text{Subj}} = (\text{Subj} \rightarrow \text{Subj})) = f(\text{Adj})$$

$$(\text{id}_{Q\text{Transj}} = (\text{Transj} \rightarrow \text{Transj})) = f(E) \quad (\text{id}_{Q\text{Transj}} = (\text{Transj} \rightarrow \text{Transj})) = f(\text{Rep}) \quad (\text{id}_{Q\text{Transj}} = (\text{Transj} \rightarrow \text{Transj})) = f(\text{Ex})$$

2.5. J-Morphisms

$$2.5.1. \alpha_J = f(S^*)$$

$$2.5.2. \alpha_J = f(B)$$

$$2.5.3. \alpha_J = f(R^*)$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(S) \quad (\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Ad})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Sys})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Ad})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(U) \quad (\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Abb}) \quad (\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Adj})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Abb})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Adj})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(E) \quad (\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Rep}) \quad (\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Ex})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Rep})$$

$$(\alpha_J = (\text{Adj}_n \rightarrow \text{Subj}_n)) = f(\text{Ex})$$

2.5.4. $\beta_J = f(S^*)$

$$(\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(S) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Sys}) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Ad})$$

$$(\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(U) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Abb}) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Adj})$$

$$(\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(E) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Rep}) \quad (\beta_J = (\text{Subjn} \rightarrow \text{Transjn})) = f(\text{Ex})$$

2.5.5. $\beta_J = f(B)$ **2.5.6. $\beta_J = f(R^*)$** **2.5.7. $\beta_{\alpha_J} = f(S^*)$**

$$(\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(S) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Sys}) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Ad})$$

$$(\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(U) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Abb}) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Adj})$$

$$(\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(E) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Rep}) \quad (\beta_{\alpha_J} = (\text{Adjn} \rightarrow \text{Transjn})) = f(\text{Ex})$$

2.5.8. $\beta_{\alpha_J} = f(B)$ **2.5.9. $\beta_{\alpha_J} = f(R^*)$** **2.5.10. $\alpha^{\circ}_J = f(S^*)$**

$$(\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(S) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Sys}) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Ad})$$

$$(\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(U) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Abb}) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Adj})$$

$$(\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(E) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Rep}) \quad (\alpha^{\circ}_J = (\text{Subjn} \rightarrow \text{Adjn})) = f(\text{Ex})$$

2.5.11. $\alpha^{\circ}_J = f(B)$ **2.5.12. $\alpha^{\circ}_J = f(R^*)$** **2.5.13. $\beta^{\circ}_J = f(S^*)$**

$$(\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(S) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Sys}) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Ad})$$

$$(\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(U) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Abb}) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Adj})$$

$$(\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(E) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Rep}) \quad (\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn})) = f(\text{Ex})$$

2.5.14. $\beta^{\circ}_J = f(B)$ **2.5.15. $\beta^{\circ}_J = f(R^*)$** **2.5.16. $\alpha^{\circ}\beta^{\circ}_J = f(S^*)$**

$$(\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(S) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Sys}) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Ad})$$

$$(\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(U) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Abb}) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Adj})$$

$$(\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(E) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Rep}) \quad (\alpha^{\circ}\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Adjn})) = f(\text{Ex})$$

2.5.17. $\alpha^{\circ}\beta^{\circ}_J = f(B)$ **2.5.18. $\alpha^{\circ}\beta^{\circ}_J = f(R^*)$** **2.5.19. $\text{id}_J = f(S^*)$** **2.5.20. $\text{id}_J = f(B)$** **2.5.21. $\text{id}_J = f(R^*)$**

$(id_{JAdj} = (Sub \rightarrow Sub)) = f(S) \quad (id_{JAdj} = (Sub \rightarrow Sub)) = f(Sys) \quad (id_{JAdj} = (Sub \rightarrow Sub)) = f(Ad)$
 $(id_{JSubj} = (Koo \rightarrow Koo)) = f(U) \quad (id_{JSubj} = (Koo \rightarrow Koo)) = f(Abb) \quad (id_{JSubj} = (Koo \rightarrow Koo)) = f(Adj)$
 $(id_{JTransj} = (Sup \rightarrow Sup)) = f(E) \quad (id_{JTransj} = (Sup \rightarrow Sup)) = f(Rep) \quad (id_{JTransj} = (Sup \rightarrow Sup)) = f(Ex)$

3. Im vorliegenden Kapitel wird aus dem obigen vollständigen System die ontische Tripelrelation 2.5.15. durch ontische Modelle illustriert.

2.5.14. $\beta^{\circ}_J = f(S^*)$

2.5.14. $\beta^{\circ}_J = f(B)$

2.5.15. $\beta^{\circ}_J = f(R^*)$

$(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(S)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Sys)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Ad)$
 $(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(U)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Abb)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Adj)$
 $(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(E)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Rep)(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Ex)$

3.1 $(\beta^{\circ}_J = (Transj \rightarrow Subj)) = f(Ad)$



Rue Petit, Paris

3.2 ($\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn}) = f(\text{Adj})$)



Rue d'Alleray, Paris

3.3. ($\beta^{\circ}_J = (\text{Transjn} \rightarrow \text{Subjn}) = f(\text{Ex})$)



Rest. Le Bariolé, Paris

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