



Index



Index

| | |
|--|------------|
| 0. Introduction | 2 |
| 1. Phisics Philosophy | 18 |
| A theory of evolution to understand everything | |
| 2. Biology | 44 |
| The biological matrix of evolution | |
| 3. Human Evolution | 72 |
| An analysis on linguistics, ethnos and geography | |
| 3.1. Relation between Design and Human Evolution | 78 |
| 3.1.1. Agriculture expansion | 82 |
| 3.1.2. Climate adaptation | 82 |
| 3.1.3. Language evolutionary flow | 86 |
| 3.1.4. Wars and territorial disputes | 88 |
| 3.1.5. Cultural and geographical isolation | 88 |
| 3.2. The importance of ethnicity in the evolution of design | 90 |
| 3.2.1. Germanic Design | 90 |
| 3.2.2. Italic Design | 94 |
| 3.2.3. Slavic Design | 100 |
| 3.2.4. Nordic Design | 104 |
| 3.3. The evolutionary perspective | 106 |
| 4. Glottochronology | 108 |
| Linguistic and Design evolutionary processes | |
| 4.1. Non Function Evolution - Drift | 110 |
| 4.2. Non Function Evolution - Drift | 118 |
| 4.3. Cultural Fusion | 128 |
| 4.4. Structural Deviation | 130 |
| 4.5. Adaption Necessity | 130 |
| 4.6. Natural Selection | 130 |
| 4.7. Environment adaption and functioning loss | 132 |
| 4.8. Reproduction in the indivisible element | 134 |
| 4.9. A Parlance's Cycle | 134 |
| 4.10. Complexity Overlap | 136 |
| 4.11. The rotation of functions in a language | 136 |
| 4.12. Gravity versus spread | 138 |
| 5. Evolutionary Patterns on Human Design Issues | 142 |
| An analysis on Urbanism, Architecture and Interior Design | |
| 5.1. The parameters for the analysis | 144 |
| 5.2. Complex Phenomena on Human Social Development | 152 |
| 5.2.1. Social organism | 152 |
| 5.2.2. Conflicting existence | 158 |
| 5.2.3. Neutrality versus unbalanced processes | 160 |
| 5.2.4. The overall analysis | 170 |

Index

| | |
|--|------------|
| 6. Model | 174 |
| 6.1. Functional component | 178 |
| 6.2. Cultural component | 190 |
| 6.2.1. Formal Aesthetic Functions | 194 |
| 6.2.2. Semantic Functions | 196 |
| 6.2.2.1 Indication Functions | 196 |
| 6.2.2.2 Nature indication | 198 |
| 6.2.2.3 Indication of practical functions | 198 |
| 6.2.3. Symbol Functions | 198 |
| 6.3. Technological component | 202 |
| 6.4. How one component pushes forward the others - Evolutionary Driving Phenomena | 208 |
| 6.4.1. Cultural Ideal | 210 |
| 6.4.2. Functional Ideal | 212 |
| 6.4.3. Technological Ideal | 214 |
| 6.4.4. Vestigium or residual function, technique or behavior | 216 |
| 6.5. Evolutionary Phenomena | 218 |
| 6.5.1. Fundamental Phenomena | 218 |
| 6.5.1.1. Expansion | 222 |
| 6.5.1.2. Reduction | 222 |
| 6.5.1.3. Fusion | 224 |
| 6.5.1.4. Division | 226 |
| 6.5.2. Semi Complex Phenomena | 226 |
| 6.5.2.1 Division by Expansion X Fusion by Reduction | 228 |
| 6.5.2.2 Fusion by Expansion X Division by Reduction | 228 |
| 6.5.2.3. Cycle | 230 |
| 6.5.2.4. Horizontal Reproduction | 234 |
| 6.5.2.5. Vertical Reproduction / Complexity Overlap | 236 |
| 6.5.2.6. Hierarchical Reproduction / Deceleration/Gravity | 238 |
| 6.5.2.7. Anti-Hierarchical Reproduction / Spread / Acceleration | 240 |
| 6.5.2.8. Divergence X Convergence | 244 |
| 6.5.4. Evolution As A Master Phenomenon | 248 |

Index

| | |
|---|------------|
| 7 Method | 250 |
| 7.1. Evolutionary Components in Design Fields | 252 |
| 7.1.1. Product design | 254 |
| 7.1.2. Communication design | 256 |
| 7.1.3. Informatics design | 258 |
| 7.2. Method for synthesis | 262 |
| 7.2.1. Examples of fundamental phenomena | 262 |
| 7.2.1.1. Communication design | 264 |
| 7.2.1.1.1. Functional expansion - The photo montage in advertising | 264 |
| 7.2.1.1.2. Technological expansion - Printing with movable types | 266 |
| 7.2.1.1.3. Cultural expansion - The advent of Helvetica | 268 |
| 7.2.1.1.4. Functional reduction - Decal letters | 270 |
| 7.2.1.1.5. functional fusion by expansion - flyer-postcard mailer: | 272 |
| 7.2.1.1.6. Cultural reduction - art nouveau in advertising and design. | 274 |
| 7.2.1.1.7. functional division by reduction - Newspaper / Free Press | 276 |
| 7.2.1.1.8. Technological fusion - Adobe Creative Suite | 278 |
| 7.2.1.1.9. Cultural fusion - PopArt: | 280 |
| 7.2.1.1.10. Functional division - Book / Art Book: | 282 |
| 7.2.1.1.11. Technological division - digital printing with variable data. | 284. |
| 7.2.1.1.12. Cultural division - modernist and non-canonical design. | 286 |
| 7.2.1.2. Product Design | 288 |
| 7.2.1.2.1. Functional expansion - Olivetti portable typewriter | 288 |
| 7.2.1.2.2. Technological expansion - Metal tridimensional printing: | 290 |
| 7.2.1.2.3. Cultural expansion - assemble of furniture at home (DIY): | 292 |
| 7.2.1.2.4. Functional reduction - bathtub: | 294 |
| 7.2.1.2.5. Technological reduction - Tools for technical drawing: | 296 |
| 7.2.1.2.6. Cultural reduction - Hat: | 298 |
| 7.2.1.2.7. Functional fusion - Sofa-bed | 300 |
| 7.2.1.2.8. Technological fusion - Wood curving technology | 302 |
| 7.2.1.2.9. Cultural fusion - Flatware set | 304 |
| 7.2.1.2.10. Functional division - flat / triangular Screwdrivers | 306 |
| 7.2.1.2.11. Technological division - disposable plastic products: | 308 |
| 7.2.1.2.12. Cultural division - Industrial Style: | 310 |
| 7.2.1.3. Informatics Design | 312 |
| 7.2.1.3.1. Functional expansion - telephone: | 312: |
| 7.2.1.3.2. Technological expansion - Digital camera: | 314: |
| 7.2.1.3.3. Cultural expansion - social network: | 316 |
| 7.2.1.3.4. Functional reduction - beeper: | 318 |
| 7.2.1.3.5. Technological reduction - answering machine | 320 |
| 7.2.1.3.6. Cultural reduction - E-Book | 322 |
| 7.2.1.3.7. Functional fusion by reduction - image banks | 324 |
| 7.2.1.3.8. Technological fusion - PDAs/Phones: | 326 |
| 7.2.1.3.9. Cultural fusion - Nintendo Wii | 328 |
| 7.2.1.3.10. Cultural division by expansion - Oversized / undersized | 330 |
| 7.2.1.3.11. Technological division - LED displays/nobs/lamps | 332 |
| 7.2.1.3.12. Cultural division - Apple / PC : | 334 |
| 7.2.2. Examples of Semi Complex Phenomena | 336 |
| 7.2.2.1. division by expansion / fusion by reduction | 336 |
| 7.2.2.1.1. division by expansion - desktop/server | 336 |
| 7.2.2.1.2. division by expansion - Guitar/electric guitar | 338 |
| 7.2.2.1.5. fusion by reduction - Multifunctional | 340 |
| 7.2.2.1.6. fusion by reduction - MDF | 342 |

Index

| | | |
|---------------|---|------------|
| 7.2.2.2. | fusion by expansion / division by reduction | 344 |
| 7.2.2.2.2. | fusion by expansion - Automobile | 344 |
| 7.2.2.2.3. | fusion by expansion - paper and digital visual | 346 |
| 7.2.2.2.5. | division by reduction - Instant Camera: | 348 |
| 7.2.2.2.6. | division by reduction - Music industry | 350 |
| 7.2.3. | Examples of complex phenomena | 352 |
| 7.2.3.1. | Cycle - Evolution of human thinking | 352 |
| 7.2.3.2. | Horizontal Reproduction - Apple's Product Language | 354 |
| 7.2.3.3. | Vertical Reproduction / Complexity Overlap - Engine | 356 |
| 7.2.3.4. | Hierarchical Reproduction / Deceleration/Gravity - Artisanship | 358 |
| 7.2.3.5. | Anti-hierarchical Reproduction / spread/acceleration - Music | 360 |
| 7.2.3.6. | Divergence x Convergence - Digital Convergence / Divergence | 362 |
| 7.2.4. | Product anatomy analysis | 364 |
| 7.2.4.1. | Mercedes Benz Bike | 364 |
| 7.2.4.1.1. | Cultural component: | 366: |
| 7.2.4.1.2. | Functional component: | 366: |
| 7.2.4.1.3. | Technological component: | 368: |
| 7.2.4.2. | 9093 Alessi Kettle | 370 |
| 7.2.4.2.1. | Cultural component: | 370: |
| 7.2.4.2.2. | Functional component | 374 |
| 7.2.4.2.3. | Technological component | 374 |
| 7.2.5. | The overall synthesis of design evolution | 376 |
| 7.2.5.1. | The end of a phase | 379 |
| 7.2.5.2. | The cyclicity of a concept | 380 |
| 7.2.5.3. | The death of a concept | 381 |
| 7.3. | Method for Analysis - proposals for new products out of analysis | 383 |
| 7.3.1. | Communication design – typeface design | 383 |
| 7.3.1.1. | Considerations | 387 |
| 7.3.1.2. | The conclusion | 387 |
| 7.3.2. | Product design – single seat car | 393 |
| 7.3.2.1. | Consideration | 395 |
| 7.3.2.2. | The conclusion | 395 |
| 7.3.3. | Informatics design – graphic programming platform | 399 |
| 7.3.3.1. | Considerations: | 399 |
| 7.3.3.2. | The conclusion | 401 |
| 8 | Conclusion | 403 |
| 9 | Appendix | 415 |
| 8.1. | Darwin among the Machines | 417 |