

HIGHEST BIOSYMMETRIES AND THE CONCEPT OF REPLICATIONAL MORPHOGENESIS

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Many problems of biological objects are connected with geometrically ordered multiblock structures like mollusc's shells, lumbar spines, fins of fishes, flowers, etc.

In the previous publications [1, 2, etc.] the author concentrated on supramolecular biosystem structures whose components are integrated into an entirety in compliance with certain algorithms and non-Euclidean symmetries, first of all, the Möbius symmetries (local-similarity type of symmetries). This type of symmetries are realized not only in ordered multiblock biostructures, but also in a volume growth of living organisms. The report consists concrete biological examples of the Möbius symmetries in volume biogrowth. Figure 1 shows one of them.

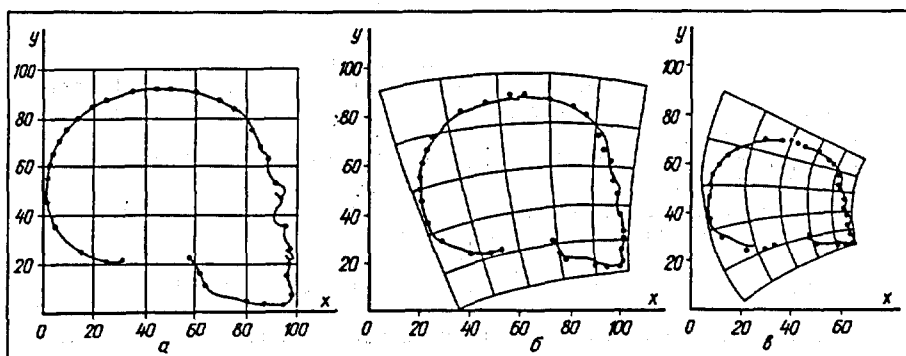


Figure 1. The Möbius transformations modelling of ontogenetic transformations of human skulls. The skull profiles of adult (a), 5-years old (b) and newborn (c) are taken according to B.M.Petten (1959).

The author has graphically constructed the manifolds of Möbius transformed patterns of a few human face profiles. These manifolds consist of "Möbius twins" in addition to well-known "similarity twins". Many types of faces which are different from the ordinary view-point, are the same from this "Möbius view-point". Our colleague - prof. R. Collins - put forward the idea that these pictures can be useful for identification of faces of any person in different ages (for example, in a criminal task).

The author has developed the concept of replicational biomorphogenesis which explains many aspects of highest symmetries phenomenon in living matter.

REFERENCES

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