**Heft 72**

**Was ist das Ganze und was ein Teil? Überlegungen zum Problem der biologischen Form**
*Nika Tsikolia*

This study shows that regenerative and formative processes are subordinate to a higher ordering. An attempt is made here to answer the following questions: can formative processes be explained mechanically or physically? Are there any autonomous morphogenetic principles?
Of course, as regards their particulars, formative processes can (potentially) be described but not explained. Material processes have a complementary, albeit indispensable, character because in the development of totality they enable its manifestation. This requires an appropriate conceptual framework. Form as ontological entity represents more than the spatial boundaries of substance. Specific organic qualities like scaling and equifinality are described and their meaning is commented on. However, this creates the problem of finding an exact definition of this field concept. I have used the concept of the morphogenetic field, but approached it primarily from the philosophical angle, i.e. with respect to its status regarding form. What this field is or what it comprises and what properties it has remain unanswered. Thus it remains open as to what role, for instance, the master gene (Gilbert et al., 1966) plays in development and why some developmental processes can be regulated more strongly than others. The interplay between form and substance obeys certain laws which have yet to be discovered.

**Schwere und Leichte**
*Olaf Oltmann*

What is the significance of gravity in the formation of the human body? Here gravity is not defined physically, but instead a ‘sensory-moral’ approach to experiencing it is first introduced. When the human form raises itself in the earth’s gravity field, a characteristic reshaping process of the foot takes place. In the sense of a torsion of the foot, the anterior foot undergoes a pronation and the posterior foot a supination, such that the latter gives rise to a building up of storeys. During these growth movements the arch of the foot develops and the foot takes on a lemniscatory form. This is connected with the effect during standing of the maximal load via the tibia from above corresponding with the point of inversion of the lemniscate. These special conditions in the case of man are compared with the apes closest to man. In man, the development of the anterior foot is polar to that of the posterior foot. The former conveys more a process of experiencing the world (‘altruism’), the latter an experiencing of the self (‘egoism’). Inside the foot the same polarity rules as between the right and left halves of the body and between pronation and supination of the forearm. From the centre between these two polar formations (anterior and posterior foot) rises the erect body – in the bony formation of the legs – countering the gravitational load. In demonstrating the process of becoming erect, which is an imitative act, it emerges that the child’s personal efforts involved in the functional demand of standing up at the same time shapes the bones. Thus the I (ego) at work in the personal endeavours is also at work in shaping the body. The I has its effect always in the balance of two polarities (in the erect posture between right and left halves of the body, between anterior and posterior foot and between pronation [receiving] and supination [giving]).

**Umstülpung**
*Hans Georg Braun*

With the help of a simple geometric construction, it is possible to demonstrate an indication given by Rudolf Steiner that the skull bone is an inversion of a long bone. Inversion means that a form can be turned inside out and vice versa. The construction comprises moving all points of a form by a constant distance (inversion constant) through a single point (inversion point). So that a true inversion can take place, the inversion point must lie inside the basic form and all points must pass through the inversion point. In the inversion, the inside of the basic form reproduces itself between the inverted borderline of the basic form and the circumcircle. The circumcircle is the circle round the inversion point with a radius corresponding to the size of the inversion constant.