

Call for papers

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Title: *On Folding*

What is a fold? The fold might be thought of as a 1-dimensional code, inscribed on a 2-dimensional surface, which creates to a 3-dimensional event. There is a whole range of different disciplines that refer in an essential way to folding and folds. The goal of this book is to find the interweaving of the different disciplines and their probably different notions of folding, focusing on the possible code character of the fold. The proposed volume will strive to address the philosophical, epistemological and the broader interdisciplinary aspects of the relations between the physical and mechanical operation of the fold and its symbolic dimension, gathering the current and up-to-date perspectives of this concept.

Taking modern mathematics into consideration, folding arose in the 1970s with René Thom's treatment of morphogenesis and more recently in the renewed mathematical investigation of Origami. Indeed, the mathematics of origami, or the geometry of paper-folding, were only started to unfold and reveal their secrets in the last 30 years. This geometry, being more powerful than Euclidean one, which only permits using a straightedge and a compass, enables us to build segments, which the latter is not able to construct. Notwithstanding its powerful applications, and even though paper was present in our society for more than hundreds of years, this geometry was forgotten – as if the fold itself was erased from the history and consideration of mathematics.

But the fold did not appear only in the domain of mathematics in the last decades, but also as a guiding concept in the natural sciences.

Taking biology as an example: with the research of the protein molecules, understanding the way, how the basic life-driving elements in nature are folded, has become crucial to the understanding of the structure of life. Moreover, Protein analysis developed a whole field of linear folding (as an “unfoldome”) including also DNA origami, and in Physics graphene is today being developed as an ideal field of planar folding (Rabe). In Materials Science actuated biological materials like swellable cellulose are analyzed as origami-like folding patterns within the emerging field of programmable matter (Fratzl, e.a). In addition computational geometry developed a comprehensive treatment of folding and unfolding incorporating linkages, paper and polyhedra (O'Rourke). This emerging topic of folding in science seems to connect the different disciplines and, not surprisingly, origami emerges as a general reference.

On the other side, there is a parallel development in the humanities, starting in the 1980s with Gilles Deleuze's book “The Fold”, where he enlivened the fold concept and charged the 17th Century Leibnizian concepts with new and surprising meanings. Architecture is a field where over the past few decades computational geometry of folding was developed as a Deleuzian discourse. This, however, was only a formal approach without functional aspects. Howbeit, the engineer and architect Buckminster Fuller, starting in the 1930s, focused on folding as a general mode of constructing structures in natural objects and artifacts. Thus Fuller serves us as an indicator for the possible integration of the humanities, the natural sciences and mathematics.

It therefore seems that most of the foldings are self-folding processes. Therefore we want to focus above all the operational character of folds that can be regarded as

mechanical and symbolic at the same time. The papers in this volume should survey the different view-points that the contemporary concept of the fold offers us in the different areas of research, ranging from philosophy, literature studies and architecture to biology, bio-materials research, and physics. The papers should be in English, 15-20 pages.