Morphogenesis

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Editors

Morphogenesis

Origins of Patterns and Shapes

Springer

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Preface

This book has been first published in French by Belin in 2006. It originates in an interdisciplinary Spring School devoted to morphogenesis and held in Berder Island (Morbihan, France) in March 2002. Although the topics were not directly focused on morphogenesis, we should also mention the ensuing annual sessions of this Berder CNRS Thematic School, organized by one of the editor of the book (A. L.), where most of the authors of the book met and interacted. This initial event has been followed by two 1-day meetings, "Journées Complexité" that we organized in Paris at the Institut Henri Poincaré in November 2003 and November 2004, and again specially devoted to morphogenesis and the specific interdisciplinary approaches required to reach a full understanding. These meetings have been among the launching events founding the Institut des Systèmes Complexes de Paris-Ile-de-France. Several other events, mostly organized by ISC-PIF, reinforced the links between the authors and the motivation to put on the paper and share with readers all the benefits and challenges of an interdisciplinary approach of morphogenesis and pattern formation. The collective enterprise that led to the present book is exemplary of the spirit of this institute and its activities.

Morphogenesis has been specially focused among the main issues arising in the science of complex systems, due to the intrinsic interdisciplinarity of the topic. The reader will discover in this book the range of objects where similar questions about the formation and persistence of their shape arise, and the wealth of complementary concepts and methods involved in their study. All the different facets have been considered together to really grasp what is morphogenesis. The ambition of this book is to offer such a multiple account. It aims to present a collective work rather than a compilation of independent papers, in which authors interacted and mutually influenced each other, and shared a similar vision about morphogenesis although substantiated in (very) different instances and contexts. To complete the cohesion and scope of the book, we propose an overview of the central questions raised by morphogenesis and a presentation of the contents in the introduction (Chap. 1).

We acknowledge the support of the European Community for the translation of this book, as being one of the outcome of BioEmergences, a *NEST-Measuring the impossible* project coordinated by one of us (P.B.) and of Embryomics, a *NEST-Adventure* project coordinated by Nadine Peyriéras, author of Chap. 9. We are much grateful to the wonderful job done by Richard Crabtree, who has to face the

challenge of translating 18 chapters with different styles and technical terms from as many different disciplines. It was a pleasure to work with him. We hope that both the authors and the readers will appreciate the final result!

Paris, July 2010

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