1 Introduction

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Over the past thirty years, the use of the term *complexity* has grown exponentially in parallel across several scientific disciplines. As with other innovative labels, however, this term has not always been understood in the same way by its many users. Nor has it been applied in the same way to different aspects of reality. For this reason, the title of this book makes use of the plural word *perspectives* in reference to complexity, leaving no doubt that there is more than one perspective at work. Our intention, however, is not to suggest that the term *complexity*, in its various scientific uses, does not share points in common which contribute toward building a coherent approach. A look over the authors gathered here will show that, despite their differing fields and countries, they share similar concerns and questions, which have led them to formulate new concepts and test new theoretical approaches and methodologies in their pursuit of knowledge.

Behind most uses of the term *complexity*, we find a strong interest in lines of thought that aim to deepen our understanding of phenomena that involve several agents held in networks of mutual inter-retro-actions within given contexts. Through their coevolution, these agents spark the emergence of new realities, with properties and characteristics that are different from their original components. It is hard to gain an understanding of these types of complex phenomena if we use only the conceptual strategies and classic methodologies of the reductionist approach. Dynamic networks of processes interweaving their component parts and their emergent totalities force us to change concepts, images and strategies, producing a shift that poses a weighty challenge for contemporary thought. As a result, *complexity* has gained increasing acceptance as the most fitting "umbrella" label for the convergence of a large number of contributions, some of which extend earlier advances made in cybernetics, systems theory, traditional ecological approaches, and figurational sociology, while others emerging in recent decades include CAS (complex adaptive systems), network theory, computational modelling, cellular automata, and Edgar Morin's work on human complexity.

Of late, the growth in lines that can directly be called *complex* has received a huge boost from the spirited addition of scientists in the fields of physics, mathematics and computing, who are contributing sound new models and conceptual tools to the advancement of our understanding of physical, chemical and biological systems. At the same time, however, these advances reveal shortcomings in our understanding of phenomena that are more strictly social and human in nature. The highly diverse agents in play are not merely cognitive and/or cultural, but also emotional and behavioural in their specificity. And one of the

most characteristic of these phenomena is the "language-communication-society" triangle, whose unique traits defy traditional approaches. Clearly, this is a phenomenon that calls for an integration of complex, transdisciplinary approaches, if we are to make any progress in understanding how it works. Indeed, the effort may require building a theoretical and methodological body of knowledge that can effectively convey the characteristic properties of phenomena in human terms, capturing their cognitive/emotional *socio*complexity.

The present work grows out of this conviction. It invites the reader to enter into conversation with an array of authors who tackle these issues from several angles, but all under the overarching view of complexity. Most of the texts are the product of three international events – two courses and an academic conference – and this explains the stylistic diversity of the texts, with some resembling lectures or talks and others closer to classic academic papers. The first of the two courses, entitled *A Living Being Called Language: Complexity and Word*, took place over a number of weeks in 2009 at the CosmoCaixa science museum in Barcelona, while the second course, entitled *Communication and the Cognitive Sciences*, was held in July 2011 at the Universitat de Barcelona. The third event was a colloquium on *Language and Complexity*, also hosted by the Universitat de Barcelona, in June 2010. The order of the texts reflects the diversity of their origins. In the earlier pieces (Chs. 1-9, and also the final annex 15) the reader will encounter contributions intended for the courses, while the later pieces (Chs. 10-14) were primarily prepared for the colloquium.

Thematically, the pieces fall into four groups: the first features the texts mostly directly concerned with the elaboration of broad *complexic* perspectives and concepts (Gershenson, Munné, Heylighen); the second group develops these approaches and applies them to linguistic phenomena (Bastardas, Massip, Mufwene, Terborg & García); the third group is devoted to cognition and communication (Puig, Martorell, Vilarroya), and the fourth group offers reflections on aspects more closely tied to socialization and education (Darder, Albero). The final chapter includes extracts about ethics and society from a talk given by Federico Mayor-Zaragoza. Bearing in mind the spirit embodied in our view of complexity, though, the texts are in no way "isolationist" or fragmentary in their approaches, but rather wide-ranging, cutting across disciplines, and characterized by contributions of real value in the joint effort now underway to build a paradigm of complexity for science and, especially, for the social and human sciences.