Preface

Metaphor and analogy have served as powerful methods in language, cognition, and the history of science for human agents and cultures. Software, robotic, and living agents also show or may take advantage of such methods in interacting with their worlds.

This is a book about 'crossing the lines' from one domain into another, and about what can then emerge. The focus of this volume is the phenomena of *meaning transfer* and *meaning construction* between different domains (minds, systems, technologies, cultures, etc.) and their computational structure and design. The tools of transfer include imitation, analogy, metaphor, narrativity and interaction which support mapping, thinking, processing, learning, reasoning, manipulating, surviving or understanding for agents coping with their worlds.

In metaphor, meaning transferred (between different agents or from one realm to another within a single system) may constitute, for example, symbolic or non-representational knowledge, particular sets of behaviors, a structural description or finite-state automaton model of a physical phenomenon, cognitive models and hierarchical categories, coordinate systems affording understanding, or a paradigmatic viewpoint for construction of science or social reality. Meaning is nevertheless only constructed with regard to some situated agent or observer under constraints grounded in the interaction of its own structure and environment. Good mappings and metaphors for situated agents are, moreover, not arbitrary, but their usefulness and quality depend upon the degrees to which they respect such grounding and structural constraints.

This volume brings together the work of researchers from various disciplines where aspects of descriptive, mathematical, computational, or design knowledge concerning metaphor and analogy have emerged. Such areas include, for example, embodied intelligence, robotics, software and virtual agents, semiotics, linguistics, cognitive science, psychology, philosophy, cultural anthropology, history of science, consciousness studies, mathematics, algebraic engineering, and intelligent control.

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