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AN INTRODUCTION TO THE SPECIAL ISSUE ON LOGIC, COGNITION AND ARGUMENTATION

In recent years we have witnessed a cognitive or ‘practical’ turn in logic [[Gabbay and Woods, 2005](#); [Urbański, 2011](#)]. The most fundamental claim of its proponents is that logic has much to say about actual reasoning and argumentation. This cognitively-orientated logic. It acquires a new task of “systematically keeping track of changing representations of information” [[van Benthem, 2008](#), p. 73], and, due to all the achievements of the mathematisation of logic, is fully up to this task. It also contests the claim that distinction between a descriptive and a normative account of the analysis of reasoning is disjoint and exhaustive [[Gabbay and Woods, 2003](#), p. 37].

As a result, we became more and more interested in applying logical tools for analyses of problem-solving, reasoning and argumentative processes, as well as in the extraction of underlying formal systems from our cognitive processes: thus, empirical research has found its own place within the realm of logic. However, we are also becoming more and more aware that in order to solve a certain task, the task-solvers first need to make sense of what is expected from them. As a result, what people are really trying to do while reasoning or arguing is often not exactly what the experimenter assumes [[Stenning and van Lambalgen, 2008](#), p. 91].

The papers collected in this special volume address these issues, employing two different vantage points. The first one is motivated by the theory and practice of argumentation. In his opening paper “Logic, reasoning, argumentation: Insights from the wild” Frank Zenker provides

a brief selective overview and discussion of recent research into natural language argumentation that may inform the study of human reasoning. Martin Hinton in “Slippery slopes and other consequences” provides a novel analysis of Slippery Slope Arguments. In the paper “A formal model of an argumentative dialogue in the management of emotions” Magdalena Kacprzak, Anna Sawicka, Andrzej Zbrzezny, Krzysztof Rzeńca and Katarzyna Żukowska offer a formal system to represent the change of intensity of emotions in argumentative dialogues, thus providing a theoretical basis for the design of an interactive tool to be used as an aid in learning how to manage emotions during such dialogues. Jacky Visser, Katarzyna Budzynska and Chris Reed, in “A critical discussion game for prohibiting fallacies”, define the Critical Discussion Game, a formal dialogue game based on the pragma-dialectical discussion model, considered a first step in the development of software to computationally model argumentative dialogue in which fallacies are prohibited along the pragma-dialectical norms.

The second vantage point is informed by research in logic of the human reasoning. The paper “Yet another shade of deduction. On measuring deductive flexibility and how it may relate to other cognitive abilities” by Natalia Żyluk, Mikołaj Michta and Mariusz Urbański describes the construction process of the Deductive Flexibility Test, considered to be a difficult deductive reasoning measure, and the research on correlations between fluency in difficult deductive reasoning and other cognitive abilities. Farshad Badie in “On logical characterisation of human concept learning based on terminological systems” employs Description Logics in order to provide a logical description and analysis of actual human inductive reasoning and learning. Michał Sochański answers his title question “What is diagrammatic reasoning in mathematics?” by distinguishing between several ways of using visualization or diagrams in mathematics. Finally, Mariusz Urbański and Andrzej Klawiter propose an instrumentalist account of abductive reasoning.

References

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