

## Introduction to the Special Issue on the Next 10 Years of Constraint Programming

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The workshop on the *Next 10 Years of Constraint Programming* was a satellite event of the 12th international conference on *Principles and Practice of Constraint Programming* (CP), which was held in Nantes in September 2006. It was a forum where the community reflected on its achievements of the last past decade, and on the challenges it faces for the decade to come. The half-day workshop ended with a series of invited talks by Eugene Freuder, Jean-Charles Régin, Mark Wallace, Hassan Aït-Kaci and Carla Gomes (who presented a statement written jointly with Bart Selman). A sixth invited speaker, John Hooker, could not attend, but offered us detailed remarks and notes that were shared with the audience at the end of the workshop.

The CP'06 workshop took place 10 years after the 1996 ACM Workshop on Strategic Directions for Computing Science, which included a session on Constraint Programming. The outcome of the 1996 workshop was a series of position papers that were published in the ACM Computing Surveys (Wegner and Doyle, 1996), and as a special Issue of the Constraints journal (Saraswat and Van Hentenryck, 1997). The outcome of the 2006 workshop is twofold: a report on the discussions that took place during the workshop was published in (Benhamou et al., 2007); and this issue provides a record, written by the speakers themselves, of the series of invited talks. We left each author completely free to choose the form best adapted to a written presentation of their vision: short, informal statement or longer and more technical paper.

Eugene Freuder was the only speaker of the workshop who had also contributed a paper on the future of CP in the 1996 special issues. In this paper he had famously summarized the goals of Constraint Programming with his title *In Pursuit of the Holy Grail*. He opens

this issue with a statement that reminds us of the role played by Constraint Programming within the broader field of Artificial Intelligence.

Mark Wallace's vision is in many respects the most resolutely optimistic that the reader will find in this issue. Mark gave an enthusiastic invited address where he listed the numerous achievements of the community, and in his paper he describes Constraint Programming as *the Paradigm to Watch*, one whose time has come.

The paper by Carla Gomes and Bart Selman discusses the engineering aspects of CP and presents a number of challenges, then invites us to consider what are the fundamental questions pursued by CP as a scientific discipline. One answer, the authors explain, is that CP should be an *experimental science*, investigated by an approach inspired by the natural sciences.

In John Hooker's vision, the future of Constraint Programming is intertwined with the future of Operations Research, and he expresses the hope that the two research areas will merge into a unified field. This field, he argues, should become an empirical science dedicated to the prescriptive modeling of human activities. He insists that purely computational issues should be a byproduct of this science, not its primary goal, and he reminds us of an old OR slogan, also valid for CP, which says that *the purpose of mathematical programming is insight, not numbers*.

Hassan Aït-Kaci concludes the issue with a position paper focussed on the *Semantic Web*. He explains that Constraint Programming has a tremendous opportunity to shine in this emerging area and that, if we meet the challenge, the next decade may well be the most fruitful yet for our community. Because of the technical nature of his argument and of the fact that a self-contained reference on the applications of CP to the web was much needed, Hassan chose to offer us a longer, more technical paper. For this reason, this paper has been reviewed by 3 anonymous experts in Constraint Programming and the Semantic Web, whom we thank for their work.

Exposing views about the future of an area of computer science is a delicate and risky exercise. We are delighted by the way these researchers have taken the challenge, and have no doubt that the position papers presented in this issue will continue to generate discussions all along the next decade.

## References

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