

# Chapter 1

## Introduction

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*“Even by the standards of war, some of the atrocities in eastern Congo are shocking. Zainabo Alfani, for example, was stopped by men in uniform on a road in Ituri last year. She and 13 other women were ordered to strip, to see if they had long vaginal lips, which the gunmen believed would have magical properties. The 13 others did not, and were killed on the spot. Zainabo did. The gunmen cut them off and then gang-raped her. Then they cooked and ate her two daughters in front of her. They also ate chunks of Zainabo’s flesh. She escaped, but had contracted HIV. She told her story to the UN in February, and died in March.”*

—© The Economist Newspaper Limited, London (June 11th, 2005).

After reading this passage from a recent issue of The Economist, can one go back to “normal”? Not easily. And even if one thinks that the research on computer-aided methods for conflict resolution and prevention can only contribute a tiny bit to help preventing such horrible events, one has to work on that. The more so as there are already programs available which calculate the risk of losses for a potential aggressor, e.g. the Tactical, Numerical, Deterministic Model (TNDM), developed by the Dupuy Institute (<http://www.dupuyinstitute.org/tndm.htm>, last checked 23 Sept 2005); even though programs of this kind sometimes may encourage an intervention in an unjust war.

But “Programming for Peace” should not mean “peace at any price”. It even could mean “war” in order to establish “long-term peace”. The title invites misinterpretation. But, to take a historic example, (nearly) all Europeans wholeheartedly welcomed the decision of the USA to enter the war against Hitler’s Germany and its allies.

Researchers of international relations soon became aware of the potential of computers for their work. Already in the Eighties of the last century data sets were compiled, such as the Correlates of War (COW) by David Singer (e.g. Leng, 1987), focusing on 30 crises selected from the 1915-1975 period, or the World Events Interaction Survey (WEIS, Schrodtt, 1991). But also in Europe, in Germany, to be precise, the *Arbeitsgemeinschaft für Kriegsursa-*

*chenforschung* (AKUF) compiled a database covering “all martial conflicts” between 1944 and 1984 (AKUF, 1987).

For the analysis, Mallery (1988) and Alker et al. (1991) attempted to use natural language processing methods to create semantic networks (“text models”) from texts related to political problem solving (the RELATUS project). Thorson and Sylvan (1982) and Anderson and Thorson (1982) described an interactive cognitive model that supported counterfactual simulation of President Kennedy’s decision process during the Cuban Missile Crisis.

UNCLESAM (Job and Johnson, 1991) was a rule-based simulation of the US decision-making regarding the Dominican Republic between 1961 and 1965. Another study focused on the analysis of responses of the Soviet Union to crises in Eastern Europe, specifically the “Czechoslovakian Crisis” of 1968 (Mefford, 1986). His program matched histories against cases to assemble composite precedents representing courses of action leading from the present into the future. In this area of the Cold War also specific Artificial Intelligence projects were proposed, in order to reduce the likelihood of having a “hot” war: the joint development, i.e. by scientists both of the USA and the USSR of an intercultural knowledge base, an English-Russian/Russian-English translation program, and a crisis handling expert system (Trappl, 1986).

A more detailed overview of the research in this time period can be found in Trappl and Miksch (1991), an edited volume of contributions from leading researchers in Hudson (1991).

Present-day computers allow for the development of larger databases with much more variables, sometimes with automated updates, statistical analyses of far higher complexity, elaborate simulation models, and even interactive uses of these databases. It may, sometimes, be of interest to investigate why some complex methods, developed and/or applied in the Eighties, were phased out and others entered the scientific arena. An overview of current research can often be found in the special issues of the *Journal of Conflict Resolution*, and a comparison of different research methodologies for studying conflict in international relations is given in the book by Maoz et al. (2004).

This volume, however, is focused on one specific task: the study and application of computer-aided methods for international conflict resolution and prevention. Since conflicts are a world-wide phenomenon, the majority of the contributors to this volume still come from the USA—no wonder!—but also scientists from Austria, Canada, Germany, New Zealand and Switzerland have contributed.

This volume is structured into three parts according to only slightly overlapping categories: