

BOOK REVIEW

D. Carneiro, P. Novais and J. Neves, *Conflict Resolution and its Context: From the Analysis of Behavioural Patterns to Efficient Decision-Making*, Springer, Cham, 2014

Conflict Resolution and its Context, by David Carneiro, Paulo Novais and José Neves, provides a general introduction to the role of online dispute resolution (ODR) as a potentially efficient and effective alternative to resolving disputes in courts. It includes an overview of Artificial Intelligence (AI) research applied to ODR systems, a framework for an advanced ODR system that combines concepts and techniques from case-based reasoning, agent-based systems and genetic algorithms, and an extended argument for endowing an ODR tool with the means to infer disputants' conflict resolution styles and stress levels for the purpose of guiding them to a resolution.

It is evident that the authors, research scientists and faculty members of the University of Minho, Department of Informatics, in Braga, Portugal, are well versed in the alternative dispute resolution (ADR) environment. The authors provide an accessible account of different types of ADR procedures (negotiation, mediation, arbitration and conciliation) (Chapter 2) and critically contrast them with standard courtroom litigation procedure (Chapter 3). They also have an extensive background in research and publications concerning academic work in ODR, case-based reasoning, intelligent agents and Ambient Intelligence (AmI), a field that aims at developing autonomous, context-sensitive systems that are highly adaptive to users' needs. Section 4.3 presents selected ODR systems originating from academic research. The extent to which the authors have personal experience in working with, fielding or testing widely used or commercial ODR systems is less clear. They mention and briefly describe some such systems, but could have provided a more detailed survey of existing ODR platforms that are actually used in practice.

The authors argue persuasively that ODR platforms can play an active role in the alternative dispute resolution process, providing parties with information that can boost their confidence in the process as well as enable them to better understand their positions. They explain how an ODR platform could actively participate in searching for and suggesting a solution on which the parties can agree. They maintain, in addition, that existing ODR platforms ignore important contextual information, which, if treated properly, could be used to increase chances that the parties will agree to a solution. Specifically, the information relates to conflict resolution styles of the parties involved in a dispute as well as the stress level of the parties during the process (Section 5.3). This constitutes a crucial argument developed extensively in the remainder of the book.

The book focuses on the role of Artificial Intelligence in implementing ODR and, in particular, in gathering some of the contextual information important in resolving a dispute. Chapter 4 surveys work from AI & Law with relevance to ADR, including sub-fields of interest such as case-based reasoning, multi-agent

systems and decision support systems with descriptions of selected projects. In Section 5.5, the authors make a strong case for the importance of particular dispute-related contextual information that case-based ODR systems can gather, including the following:

- BATNA: Best Alternative to a Negotiated Agreement (*e.g.* the best possible outcome in litigation);
- WATNA: Worst Alternative to a Negotiated Agreement (*e.g.* the worst possible outcome in litigation);
- ZOPA: Zone of Possible Agreement; the space between the BATNA and the WATNA;
- MLATNA: Most Likely Alternative to a Negotiated Agreement (*e.g.* the most likely outcome in litigation); and
- Probability of each outcome within the zone of possible agreement.

This information can shape disputants' expectations and inform their arguments in negotiation. For instance, ZOPA relates to the degree to which a party may be willing to come to an agreement.

The less space there is between the BATNA and the WATNA, the less dangerous it becomes for the party not to accept the agreement (unless, of course, their BATNA is really disadvantageous). A wider space between the BATNA and the WATNA may indicate that it can become rather dangerous for the party not to accept the ODR agreement (except in situations when the WATNA is really not inconvenient at all for the party). (p. 123)

The other important contextual information, including psychological information about the disputants, their stress levels and conflict resolution styles, will be collected by AmI tools, the subject of the third part of the book.

The authors have developed an experimental ODR platform called UMCourt. In part II of the book they propose a high-level but comprehensive technological framework of an AI-based ODR platform based on their experience with UMCourt (and illustrated with some examples). This discussion lays out the individual constituents of a working ODR platform and will be of great interest for anyone developing an ODR platform. Their UMCourt framework in Chapters 6 and 7 includes useful diagrams of architectures for the processes of information (*i.e.* case) retrieval, assisted negotiation and generic conflict resolution, as well as lists of the kinds of agents such a system would integrate. Basically, given an inputted dispute, UMCourt retrieves similar cases, the most similar of which could serve as the basis of a resolution, and engages the parties in a negotiation in which the system proposes for the parties' approval solutions based on what worked in similar cases.

The UMCourt framework's use of cases in supporting mediation and negotiation is especially instructive. Retrieved similar cases help in computing the "BATNA and WATNA values, for both parties" (p. 166). This helps "the parties have a clear picture of the possible outcomes of the dispute" and can be used by one party "to put pressure on the other party in the negotiation session to come,

especially in dispute resolution procedures that allow the choice of going to court” (p. 166). In addition, similar cases, retrieved from the case base, also enable the parties to find “potential solutions for their differences. Upon retrieval, the cases are adapted” so that they illustrate to the parties the outcome of their own dispute as if it were decided on the basis of the similar case (p. 166). The authors provide an example drawn from Portuguese labour law to illustrate rules for computing the parties’ BATNAs, WATNAs, etc. One does not see the inputs and outputs, and the example does not quite succeed in illustrating in detail the role of case-based solutions, but it does help to anchor the discussion in an illustrative context. For UMCourt, the authors also envision in Chapter 8 a genetic algorithm approach to generating new solutions in addition to those based on past cases. The authors, however, do not present an actual example of generating a new solution. It might have been instructive, for instance, to illustrate in the labour law domain what a solution generated by a genetic algorithm would look like.

Although informative and interesting, the UMCourt discussion may leave the reader with a central question. What *should* the role of AI be in the workings of an ODR system?

The authors’ answer to that question seems clear. The role for AI should be to achieve an ever-increasing level of autonomy, resulting in “platforms that can manage conflicts autonomously, taking as input the evolving state of the parties and a list of possible solutions” (p. 8). Eventually, such a system will employ “intelligent agents that will have the autonomy for representing the intentions and desires of the humans” and that “try to behave and pursue the same objectives that the humans that they represent do” (p. 33). The information about the parties includes “the parties’ level of stress or personal conflict handling style” (p. 182). This will allow the mediator to adapt the strategy devised at the outset of the process, to respond to significant changes in the parties’ state (p. 182). The systems will be dynamic both in the sense that they “may adapt autonomously and in real time to new circumstances”, even to the extent of taking “actions aimed at improving its users’ state, in an autonomous way – “inducing moods” in the parties, as it were (p. 276) – and in that the systems are “self-improving over time” (p. 248). In other words, the goal is to create an “autonomous negotiation system”, which, like “a human mediator can use these solutions [it generates] to conduct the conflict resolution” (p. 182).

It is, of course, a highly ambitious goal that these authors hold out for AI in an ODR system, and not a goal that all readers will be convinced is either feasible or desirable. For instance, in the authors’ example of an idealized virtual assistant, the envisioned system “helps John to understand the singularities of his case”, assists in defining a strategy and in assessing his chances and “gives John a more realistic view on his problem, making him feel more confident”. At the same time, the system “constantly monitors John’s behavior to search for undesirable emotional symptoms as well as signs of fatigue or stress” in “the way he moves the mouse, the way he uses the keyboard, the way John moves, blinks or stands and even the way John talks [...]. In order to maintain John with a positive attitude, the system is able to play music to John’s liking”, “to change the paintings and the colors of the walls” and “to control the environmental

parameters such as the luminosity and temperature” (p. 88). One might call it the AmI ODR system from HAL (9000)!

In fairness, however, the authors provide four chapters of ideas and preliminary results in support of an AI ODR system’s ability, ultimately, to detect parties’ stress levels, infer their conflict resolution styles, relate that information to the parameters set by the parties’ BATNAs, WATNAs, etc. and settle the conflict. They provide a useful introduction to personal conflict resolution styles (Section 10.2) and propose a plausible method for automatically classifying resolution styles. They explain the role of stress in conflict resolution, propose a non-invasive method of measuring stress during the dispute resolution process and discuss possible ways to mitigate the impact of stress on the outcomes of the process. In one of the most interesting parts of the book, they present experimental results from a stress measuring game designed by the authors (Chapter 11). While the parties are engaged in a model negotiation, the authors measure certain aspects of their behaviour, for example, how they move a mouse, use the keyboard or touch a touchscreen. By inducing stress the experimenters gain data to determine whether a party is stressed or not (and how much). The experiments suggest that when stressed, parties reach worse results in the game, change their conflict resolution style more often and make hasty decisions.

One might criticize their studies’ results as highly preliminary and falling far short of demonstrating the success of an integrated approach to ODR. Indeed, the authors provide no solid empirical support for their argument that utilization of more contextual information surrounding disputes, including the position of the parties, their personal conflict resolution styles as well as stress dynamics during disputes, improves the chances of successful dispute settlement either in ADR or ODR.

By focusing so much attention on their ambitious goal for AI’s role in an ODR system, moreover, they miss an opportunity to answer what may be a more pressing question at this juncture in the development of commercial ODR systems. Can AI techniques help to address the problems that publishers and distributors of large-scale ODR systems are currently experiencing or anticipate? How can AI methods assist practical ODR systems in doing a better job of what they are doing now, even if the contributions are only at the margins of the existing ODR systems?

For instance, one kind of existing ODR platform addresses resolving high-volume, low-value disputes between, say, buyers and sellers, including consumers and small businesses.¹ The parties enter information about their claims and defences via forms and include supporting evidence as directed. Given the large number of transactions, it is to be expected that a considerable volume of data will be generated, data that could be useful for computing expected outcomes and for detecting fraudulent or frivolous claims. The data would include histories of how each of the disputes developed over time (*e.g.* the succession of claims and defences asserted by the parties) as well as records of how the users behaved with respect to the system (*e.g.* time-stamping of parties’ filings or other interactions

1 See, *e.g.*, Youstice, <www.youstice.com/en/>, visited 17 September 2014.

with the ODR platform, elapsed times between successive events or geographical information about parties' locations). Given the accumulation of such data, it would be of special interest to know how to apply machine learning techniques to predict the outcomes of disputes and to optimize the order and selection of the ODR system's suggested options in order to maximize settlements, and to detect problematic uses of the ODR system.

Certainly, the authors mention some systems intended for commercial applications. They give an example of a commercial law-based rule for determining a party's BATNA for portable and non-portable consumer goods (p. 137). They also report results from a study of conflict resolution styles and stress of each party in a negotiation game in which participants played the roles of manufacturer and retailer (p. 251).²

Their treatment of machine learning, however, is focused on enabling their goal of achieving Ambient Intelligence in an ODR system: Investigating "if it is possible to build a classifier for touch patterns that can be used in real-life applications to provide some information about the level of stress of the user" (p. 236), inducing "conflict handling styles" of parties (p. 249) and building "a classifier for distinguishing between stressed and calm touch curves" (p. 264). They mention time-stamping "certain events, in order to compute performance indicators and point out possible paths to improve the environment functioning (e.g. most common causes for case retrieval failure, average time of each activity)" (p. 133), but they seem far more interested in time-stamping mouse clicks and keystrokes to assess parties' stress levels (*see, e.g.*, pp. 197f, 235, 252). The authors mention the goal of developing "large-scale services", but they think that acquiring population-wide "preference models (including the tastes, the interests or the expertise) as well as behavioral models (including activity patterns or past actions)" is the way to achieve it. The authors are aware of privacy and other ethical issues related to the deployment of future ODR systems, but they do not focus on ODR systems at scale in the sense of those that deal with millions of disputes or on how best to apply machine learning tools to analyse them. In a high-volume, low-value context, litigation may not be an option, especially if the parties are widely distributed geographically and across borders. Reputational incentives for vendor participation in maintaining consumer and trader trust in a large-scale commercial system may be a more potent influence for resolution than the threat of commercial-law-and-litigation-based alternatives to ODR.³ This means that litigation-oriented measures of BATNAs, etc. will not be particularly relevant. This would be especially true in a cross-border context, an increasingly

- 2 Readers of the bound edition of this book will have difficulty finding topics as there is no index. The search function of the e-reader associated with the review copy of the book was not functional. Fortunately, the pdf version of the book obtained through SpringerLink was searchable with Adobe Acrobat Pro.
- 3 D. Doktori, E. Karlik & L. Perkins. 'Stakeholder Analysis and Design Recommendations for an EU-Wide Online Dispute Resolution System', Harvard Negotiation & Mediation Clinical Program (HNMCP), R. Van Loo, Supervisor; <www.onlineresolution.com/files/HNMCPfinalpptx>; visited 13 September 2014.

Book Review

important context not directly addressed in this book.⁴ Indeed, although legal regulation is an important aspect of the ADR/ODR reality, almost no related information can be found in the book.

Despite these criticisms, however, the authors of *Conflict Resolution and its Context* have provided an excellent introduction to ADR, a valuable primer for anyone interested in developing ODR systems, and a well-developed vision for a case-based ODR system that can some day guide parties in settling disputes based on new sources of contextual information. Who knows? With Apple Watches soon to monitor our biological signs, Ambient Intelligence may well be the wave of the future in ODR.

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4 See, e.g., United Nations Commission on International Trade Law, Working Group III, Online Dispute Resolution, <www.uncitral.org/uncitral/commission/working_groups/3Online_Dispute_Resolution.html#cites> visited 13 September 2014.