

# Emotion in Interactive Technology–Mediated Decision Taking and Negotiation

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## INTRODUCTION

There is a renaissance of research on emotion in decision taking/negotiation. This is indicated, for instance, by a recent publication of two special issues of the *Group Decision and Negotiation Journal* 2008 and 2009 dedicated to emotion in negotiation, the establishment of the *International Journal of Synthetic Emotions* and by multiple international workshops on affective interaction. Contemporary research on interactive technology-mediated decision taking and negotiation treats emotion as a major factor in re/structuring and re/framing of problem representation and solution (Barry 2004, 2008; Kumars 1997; Druckman and Olekalns 2008, Martinovski & Mao 2009). It covers e-mail based interaction, decision support systems, negotiation support systems, Virtual Agents systems, web-based decision and negotiation support systems (such as INSPIRE, ATHENA, SMARTSETTLE) (Pommeranz et al., 2009). Some of these systems support training, others support online and on-going negotiations but many of them still treat emotion as a hindrance, which needs to be mitigated (Broekens et al., 2010).

Traditionally emotion was viewed as opposite to rationality and therefore negotiation, argumentation and decision taking theories, models and support systems did not involve emotion although there is plenty of life evidence that emotions play significant role in individual and group decision and negotiation. For instance, the Norwegian Minister of Foreign Affairs, Johan Holst was so deeply affected by his difficult mediating role in the negotiations preceding the Oslo Accords in 1993 that he died only 57 years old after a minor stroke. Contemporary cognitive theory does not necessarily view emotion as opposite to rationality anymore and interactive technology discovered the necessity of emotion in simulation of interaction/cognition. This resulted in the dawn of so called affective

computing (Picard, 1997) and affective negotiation support systems (Broekens et al., 2010).

The next five sections offer a quick review of the following topics: relation between emotion and cognition; emotion in argumentation and negotiation theory; emotion in simulated negotiation; emotion in support systems for ongoing negotiation and decision taking; language and emotion in e-negotiation; studies on specific emotion and intercultural contexts. The article ends with future research directions and concluding words.

## BACKGROUND

### Emotion in Cognition

One of the drives behind the stronger interest in emotion in the context of interactive technology mediated decision taking and negotiation is ‘the “cognitive revolution” that swept across the social sciences in the 1960s’ (Goodwin & Heritage, 1990: 283), which turned the spotlights on social interaction as a ‘primordial means through which the business of the social world is transacted’ (ibid.). This attention on interaction and human agency opened the way to the study of emotion in interaction, including decision taking and negotiation. At the same time, contemporary neuroscientists reported evidence for the involvement of emotion in rational cognitive processing. Neuroscience observes that emotional feedback is present in lower species, but other cortical cognitive feedback is present only in higher species. In that sense, emotion functions in evolution as a coordinator of other cognitive and non-cognitive functions. Damasio (1994) suggests that the state of the mind is identical to the state of feeling, which is a reflection of the state of the body i.e. that rationality stems from emotions and that emotions

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stem from bodily senses. Thus, if cognitive science used to concentrate on what it considered to be ‘purely cognitive processes’ such as decision taking, memory, calculation, planning, perception today it includes also emotion, as a constant cognitive process, not just as a specific and/or sudden experience, mood or an attitude.

## Emotion in Argumentation and Negotiation Theory

With the exception of Walton (1992), the most popular argumentation theories such as van Eemeren and Grootendorst’s (2004) and computational models for multi-agent negotiation and argumentation-based systems such as Carles *et al.* (1997); Parsons (1998), Kraus (2001), and Traum *et al.* (2003) did not address the role emotions play in argumentation and negotiation. As Kumar (1987) and Druckman and Olekalns (2008) observe in their overviews, before the 1990s negotiation studies such as Nisbett and Ross (1980), Shakun (1988), Taylor and Crocker (1981), Alderfer (1987), Payne, Bettman and Johnson (1992), etc. emphasized information-processing (Schwarz, 1990) and heuristic aspects of decision-making. The first psychologically motivated behavioral decision theories in modern economics (e.g. Tversky & Kahneman 1974) were met with mixed feelings. It was easy to experience behavioristic approaches as commercialization of ‘the managed heart’ (Hochschild, 1983) precisely because their focus was on instrumental functions of emotion. The main question was: how can one use emotion in negotiation to achieve better outcome? As a result, research on the topic reflected appraisal theory, which, roughly, defines emotion as a cognitive appraisal, as a reaction to/coping with cognitive interpretation (Carver & Scheir 1990). Some even defined intelligence as an ability for emotional self-control and self-monitoring for the purpose of strategic goal accomplishment (Salovey *et al.*, 1994). The appraisal-based definition of emotions as intense reactions to achievement of goals is pervasive even today (Barry 2008) especially in the context of artificial intelligence applications development (Traum *et al.*, 2003). It underlines the strategic and tactical functions of emotion, which are hard to train, prepare or monitor with current interactive technology.

Related to appraisal theory is the anthropological constructivists theory of emotion, which points out that emotion in negotiation and decision-taking is not only a strategy or tactics related to goals but also a

social and cultural phenomenon (e.g. Ortony, Clore & Collins, 1988; Clore, Ortony, Diences & Fujita, 1993). However, although this trend moved a bit away from the goal-behavioral paradigm it is not fundamentally different from appraisal theory as it also defines emotion as appraisals, triggered not only by goals but also by cultures and social relations. Researchers from this period concentrated on emotion as a cause, a consequence and as tactics and not so much on understanding of mechanisms of emotional exchange between-man-and-man within various activities. Negative emotions were privileged mainly because they are part of a major area of research, namely conflict resolution (Kilgour & Hipel, 2010). Displayed positive emotions between negotiators have number of both positive and negative effects (see also Kumar 1997):

- Enhanced commitment, bonding and confidence (e.g. Kramer, Pommerenke and Newton 1993; Shiota *et al.*, 2004; Kopelman *et al.* 2006)
- Enhanced flexibility (e.g. Druckman & Broome, 1991)
- Mutually satisfactory agreements (e.g. McIntosh, 1996)
- Enhanced gullibility and passivity (e.g. Schaller & Cialdini 1988)
- Heightened expectations which likely lead to disappointment (e.g. Parrott, 1994)

## Emotion in Simulated Negotiations

The conceptual change today in definition of emotion and cognition is heralded by studies in computer science, especially in robotics and virtual agent design. In 2003 Hudlicka observed: “In the process of creating the virtual community and the virtual inhabitants, it became evident that all human cognitive activities and processes are heavily dependent of what we colloquially call emotions. “Rapidly growing literature on the topic communicates computational ways for integration of emotion in virtual agents and a need of emotion in these virtual agents models and virtual negotiation worlds (Rickel *et al.*, 2002; Gratch & Marsella 2001, 2004). Virtual agents used for negotiation training, among other things, can hardly fulfill their purposes if they don’t connect emotions, actions, and speech to each other (Martinovski & Traum 2003; Gratch & Marsella 2005). Traditionally AI applications use appraisal

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