"Can I ask you a favour?" - A Relational Model of Socio-Cultural Behaviour

(Extended Abstract)

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ABSTRACT

In this paper we provide an overall description of a model of social behaviour that allows a flexible parametrisation of cultural expectations. These expectations are associated to how people perceive and treat others from a socio-relational perspective.

Categories and Subject Descriptors

I.2.11 [**Artificial Intelligence**]: Distributed Artificial Intelligence—*Intelligent Agents*; J.4 [**Social And Behavioral Sciences**]: Sociology

General Terms

Algorithms, Design, Human Factors

Keywords

Virtual Agents; Relational Behaviour; Culture

1. INTRODUCTION

Given its importance in social interaction, research done on developing virtual agents that are culturally-adaptable is currently growing. So far, there has been a large focus on modelling specific aspects of conversational behaviour such as language [5], gesture expressivity [7], posture [2] or proxemics [4]. However, there are important cultural differences in the way people treat others from a relational point of view, which is reflected in their actions towards them. For instance, the way people regard and comply with strangers varies greatly across cultures [1].

The problem addressed in this ongoing research concerns the creation of agents capable of expressing cultural differences in their relational behaviour, namely in the way they perceive and treat others. In order to address this issue we propose a model that is based on the status-power theory of human motivation proposed by Kemper ([6]). Inspired by this theory, we created a model of Social Importance (SI), a dynamic scalar that drives the agent's social behaviour in a manner that reflects its cultural parametrisation.

We are are currently using the proposed model for the development of an agent-based inter-cultural training tool named Traveller, where the goal is for the user to learn about how to deal with cultural differences by interacting with agents associated to different synthetic cultures. Our model will be used to facilitate the generation of these cultures. The application is being developed in the context of the eCute project[1] and it is currently at an early prototype stage.

2. MODELLING SOCIAL IMPORTANCE FOR CULTURE-ADAPTIVE AGENTS

In Kemper's theory [6], the status one attributes to another, which we refer to as social importance (SI), signifies the extent to which one will voluntarily respect/comply with the wishes, needs, interests of the other. Because we often need the collaboration of others, gaining and maintaining one's social importance is a very strong motivational force that drives our behaviour.

Every time we ask a favour to a person, big or small, we are doing a claim on our social importance in the eyes of that person. If we have enough then the other person is likely to confer the importance claimed. However, if the claim is too high, then we risk not only the other person not doing what we asked but also to lower our SI in their mind. An example of a small importance claim would be to ask a direction. Most people will comply with such request even when coming from a complete stranger. Conversely, a very high importance claim would be a marriage proposal, a claim that usually requires very careful thought in most cultures.

As stated by Kemper [6], culture specifies which concrete acts are interpreted as claims and how much each SI is claimed by each of them. Similarly, culture also specifies which acts are conferrals as well as the amount that they confer. Finally, the determination of how much social importance others have is also heavily influenced by culture. For instance, people in cultures with a large power distance as defined in [3] attribute more SI to superior hierarchical roles than in small power distance cultures.

[1] www.ecute.eu

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To implement the aforementioned notions, as shown in Figure 1, the proposed model of relational behaviour encompasses the cultural parametrisation of the following three components: (1) SI Attribution Rules, (2) SI Conferrals, and (3) SI Claims. Each of these components affects a different process of a typical BDI agent. Namely, the first one affects perception, the second affects deliberation and the third one affects planning.

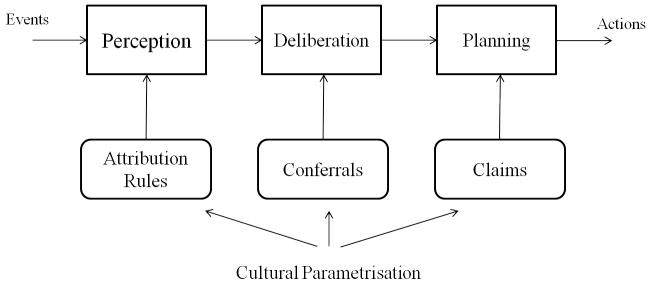

Figure 1: General Diagram of the Relational Model for Socio-Cultural Agents

SI Attribution rules represent cultural conventions on how much certain factors result in attributing more or less SI to another agent. These factors can be, for instance, the existing interpersonal relation towards the target agent, their membership in certain groups, or their behavioral conduct. Each rule is defined with a target, a set of activation conditions, and the amount of SI that is gained or lost by the target of the rule. These rules will then affect the agent's perception in the following manner. Whenever an agent updates its beliefs, it is determined which rules can be activated for every other agent. This is done by testing the activation conditions specified in the rule. If all of them are true, then the SI of the target agent is changed by the predefined amount. Besides determining how much SI is attributed to others, agents infer how much SI is attributed to them by others. This is crucial to determine whether an agent can perform a SI Claim or not. To deal with this issue, agents apply perspective-taking and use the same rules but from the perspective of the other agents.

As argued in [6], we have an intrinsic motivation to confirm to others, through our actions, the amount of SI we attribute to them. Moreover, the amount conferred by a particular action and the situations in which a conferral act is expected is largely dictated by culture. In our model, an SI Conferral represents such cultural assumptions, by associating a specific action with the amount of SI that the action confers. Additionally, an SI Conferral has a set of context conditions. When these are verified, if the SI of the target of the conferral act is equal or higher than the value of the conferral, an goal to execute such act is activated. The utility of such goal is linearly proportional to the amount of SI it confers. The rationale is that agents want to confer as much as they think the other agent deserves. Keep in mind that the agent will still choose regular non-conferral goals provided they have a higher utility. Consider a situation where a person invites a close friend to a party. The friend might decline the invitation because he needs to work late on a project for his company and not because the host has not enough SI.

Finally, as previously discussed, we avoid doing actions that, according to our cultural conventions, claim more SI than what we have. To represent this notion in our proposed model, SI Claims allows the association between an action an a particular amount of SI that the action claims. They then affect the agent's planning in the following manner. After creating the plan to achieve the agent's current intention, the agent checks if any action of the plan corresponds to an SI Claim. If there is an SI Claim directed at another agent, the agent uses its inference of how much SI it has on that agent's perspective. If the agent infers that the SI is below the SI Claim, then the agent will exclude that action from the plan and try to find an alternative path to achieve the intention. As such, agents will never try to claim more SI than what they believe they have. Although such behaviour does occur in humans, its inclusion is not trivial and is left as future work.

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