

**1. Principle one; Leading the dialogue:** agent behaviors affect the structure of the negotiation, in different manners:

**a** - Following A. Galinsky (see attached paper) Dominant or power increases the tendency toward action. moreover, in a study, he demonstrates that power increases manifestations of actions in the service of personal desires and goals.

**b**- In the link bellow, It is stated that powerful negotiators are more inclined to make the first offer in the negotiation

(<http://www.pon.harvard.edu/daily/negotiation-skills-daily/how-power-affects-negotiators/>)

*Reminder:* The dialogue system is defined with two types of utterances:

1. Negotiation moves; which are Propose, Accept and Reject.
2. Information exchange; which includes Ask and State Preference.

From theses behaviors of actions, we defined our dominant/submissive agent to behave as follows:

- The dominant agent takes the lead by expressing more "negotiation moves, proposals in general" than the submissive agent. For example:
  - after 2 dialogues turns where agents stated their preferences, the dominant agent proposes a value. (with respect of its own preferences)
  - In response to a non acceptable proposal, the dominant agent counter proposes
  - The same after a Reject expressed by other, the dominant proposes another value, or the same if the rejected value is his most preferred value.
  - When other accepts a criterion, the dominant agent proposes a restaurant with the accepted value.

However, the submissive agent doesn't take initiative at all, he follows the lead of the other negotiator.

- After two non acceptable proposals, rather than proposing a value, he ask the other about his preferences.
- He only proposes a value, if the other stated that he likes it and the value is acceptable for self.

In the dialogues generated so far, the dominant agent is the first who makes a proposal during the negotiation.

## **2. Principle two: Self satisfaction Vs Other satisfaction**

During the negotiation, speakers use negotiation moves which involves decisions. These decisions impact on the satisfaction of both speakers. To resume our discussion on behaviors of this principle:

**a**- First, low-power negotiators care about the well being of other during the negotiation. This is what we called "taking into account other preferences to propose a value".

**b**- Second, It was proved (De Dreu) that low-power negotiators make larger concessions and have lower level of demand comparing to high power negotiators.

The first behavior was implemented in the model, by taking into account other preferences when making a proposal. Therefore, a non dominant agent computes a proposal which is acceptable for both speakers. While a dominant negotiators consider only his preferences.

The second behavior was implemented in two ways: The level of demand was fixed in the initial mental model, with a high level of demand for the dominant agent, and low level for submissive agent. In addition, we integrate the behavior of concession in submissive agents. Therefore the submissive agent ignore criteria in his decision.

### **Proposed ameliorations:**

1. Randomize the initiator of the negotiation. (done)
2. Review the condition of negotiation success and failure for a **collaborative negotiation** with dominant and submissive negotiators. The average between selfish satisfaction and negotiation satisfaction.
3. Add a function of satisfaction that calculates the utility of the next move.

$$Satisfaction(move) = w_{self} satisfy(self) + w_{other} satisfy(other)$$

where *weights* are computed using the relation of dominance. For example; a dominant agent puts more weight on self satisfaction, where a submissive agent puts the same weights on both self and other satisfaction.

It is clear how this function will be calculated. However, it is still not clear to me when and how can we use it in our model. I see that the notion of satisfiability will be used in negotiation moves (choosing the value to propose, accept and reject), but at the same time we keep also the notion of acceptability which changes during the negotiation for the submissive agent due to concessions.