

Chapter 30

A Framework for Reaching Consensus Under Uncertainty in Multi-Agent Negotiations

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ABSTRACT

International negotiations often have to be reached and ratified even though the parties involved have diverging opinions and interests. One of the common protocols used in order to achieve consensus is to make use of a neutral agent, called the facilitator whose role is to assist the procedure by allowing communication equally among different parts and initiate the procedure by a proposal which is more likely to be accepted by all decision makers. A model of this procedure is presented, providing a good candidate for the initial proposal of the facilitator and quantifying various concepts such as the bargaining power of each party.

GLOBAL ISSUES AND NEGOTIATIONS

International space is shaped by various communications and contacts of states and other agents, such as ING, NGOs, etc. Meetings, working groups, organizations and summits are types of international vehicles in order to discuss and make decisions concerning the formulation and implementation of actions and policies on issues considered as requiring common (inter)action by multi agents' in cooperation. Different parties may have different perspectives, interests and perceptions, but nevertheless share a common goal, even though they may not perceive the same route towards achieving it. At the same time negotiation includes reciprocity for all parties even though parties can have conflict of interests or get different gains. Each part tries to get more from the other part usually preferring an agreement to an interruption of contacts and negotiations.

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The above situation is quite general and applies to all aspects of negotiation. To make the discussion more concrete, consider environmental issues, which quite naturally involve decisions related with multiple agents with diverse features and characteristics.

Among environmental issues, climate change is considered to be the most important problem which needs urgent cooperation among states and other agents in order to combat it globally. This cooperation involves negotiations and possibly cooperation between different parts with different beliefs, conflicting interests and almost always unequal power often reflected in unequal bargaining power. One could argue that climate change is based on scientific knowledge commonly assumed to be impartial, precise and providing an authoritative uniformly accepted truth, around which all parties involved must comply and agree in order to achieve the common goal. However, this is not necessarily true for at least two reasons. The first one is that science is not necessarily politically neutral, and all scientists do not share identical views concerning the same phenomenon and do not agree on the best way to solve a problem (this is apparent by looking at the scientific debate on the field). The second one is that scientific theories are often based on observations which may be incomplete, and subject to uncertainty, thus leading to possibly conflicting theories, models and predictions. Such conflicting models often form the basis for the decision making process, complicating the negotiation process even more. The situation becomes even more complicated, since scientific viewpoints and proposed solutions may have social and economic effects that are difficult to quantify and specify, and thus are unavoidably subjective. Controversial scientific opinions will have to be accepted and translated into political decisions, and only through their implementation can solution be sought.

It is by now commonly realized and accepted that climate change by human-induced actions is a dangerous one and action has to be taken in order to reduce or stop it as Article 2 of the United Nations Conference on Environment and Development in 1992 mentioned (*Oppenheimer, et al., 2005*). All participants have to reach on a consensus on measures that they have to adopt in order to prevent danger and risk irrespective of their definition. The question is becoming more important as decisions made today are related to the issue of sustainability of future generations. Clearly a common goal is set, the question is how to reach it.

The actions and policies in order to combat or avoid dangerous warming are not based on scientific knowledge but on the interpretation of this knowledge into political terms of individual national action and common good, present action and future situation. The question is to define danger for who and when as well as economic, political, scientific and technological costs and benefits.

The following comment by Hulme, provides an idea of the complexity, the conflicts but at the same time the importance of the issue. He mentions the four different ways which indicate the significance of climate change; as scientific dispute, as justification of commodification of atmosphere, as an incentive of a new social activism and as a threat to security or in other words some scientific, economic, social and political aspects of climate change (Hulme, 2009: XXVII).

Formidable as it may sound, a single solution to such multi-dimensional problems must be achieved.

The vehicle for reaching this commonly accepted single solution is through international negotiations.

Climate change negotiations are repetitive and officially sponsored by the UN since 1992 including meetings of experts and working groups for preparation of summits that are scheduled annually. Moreover, these discussions and meetings have taken place in a specific framework and participants are divided by economic, geographical, and development characteristics into various categories that have different national contribution for climate change and have to adopt different policies. Often negotiations for climate change among states are connected with other negotiations. In these terms, the Kyoto

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