
Simulating Climate Change Negotiations: Lessons from Modeled Experience

Ariel Macaspac Penetrante

Studies of the negotiation process in the context of climate change have been limited. This report argues that it is necessary to cope not only with the complexity of the substantial issues related to climate change (scientific, technical, economic, political, and social) but also with the complexity of this multiparty international negotiation process and with the uncertainty of the negotiation outcome. Preparing decision makers for negotiations requires developing a tool kit that includes strategies for dealing with complexity; creating such a tool kit requires collecting knowledge through the systematic study of relevant negotiations.

Analyzing the documents and transcripts from previous climate change negotiations is necessary but insufficient. In this report, I argue the need to employ innovative approaches to understanding the complexity of the climate change negotiation. For this reason, I conducted a series of games that simulated United Nations-sponsored climate change negotiations.

In these games, variables were manipulated to explore the impact of various conditions on negotiating behaviors, processes, and outcomes. The results offer insights that may help researchers and negotiators develop practical strategies to cope with the complexity of international climate change negotiations. Among these are propositions about reframing the “North–South divide” and about encouraging “threshold states” to assume the role of the bridge between various groups and coalitions in the international system.

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Introduction

I hear and I forget. I see and I remember. I do and I understand.
—Confucius, 551–479 BC (Meadows 1992)

Understanding the dynamics and processes of climate change negotiations is not easy. Most of the literature on climate change negotiations has focused on scientific and technical issues (Waever 2004; Lieberman et al. 2007), although I believe that it is the political preconditions affecting the actors, structures, issues, processes, and outcomes that, for the most part, determine how climate change is addressed (Penetrante 2010).

The United Nations Intergovernmental Panel on Climate Change (IPCC; 1996) has recognized that, because the complexity of climate change has made developing an effective quantitative approach to climate change decision making challenging, if not impossible, decision makers must rely on negotiation in crafting responses to the problem. Thus, it follows that, because of their importance and complexity, climate change negotiations require more scholarly attention.

An effective process-oriented analysis of climate change negotiations should involve identifying those factors that inhibit parties from reaching mutually acceptable global agreements. A process outlook involves addressing not only the complexity of the substantial scientific and technical issues related to climate change (Adger et al. 2003; Marland 2006) but also the complexity of the negotiation process itself. The negotiation process is often forgotten by policy makers because it is taken as self-evident and self-enforcing. National governments often fail to consider the full range of negotiation complexities in their negotiation preparations. Furthermore, climate change negotiators often fall into one of two categories, which limit their effectiveness: some are scientific experts on climate change who lack negotiation skills while others have excellent command of negotiation skills but limited knowledge of climate change issues.

The processes causing global warming are multiple and interlinked, which suggests that solutions will also be linked and may thus have unintended consequences. For instance, negotiations on emission reductions inevitably affect such issues as energy security. While policy makers are expected to meet international expectations in their negotiation behavior, they must simultaneously confront domestic pressures, for example, concerns about the role of nuclear energy to guarantee energy security (see Putnam 1988 on two-level games). Simultaneous bargaining (Folmer, van

Mouche, and Ragland 1993; Carraro and Siniscalco 1997) on different issues has been one feature of climate change negotiations, which has further complicated agenda setting, increased the number of stakeholders, and required coordination of a larger number of decision makers.

Policy makers and negotiators need the latest scientific knowledge on global warming's causes and effects. Participation in the climate change negotiations can be described as "advanced knowledge diplomacy," which involves developing a comprehensive overview of the complexity of issues. Obviously, conflict resolution is a basic dimension of the climate change negotiations — conflict over climate change stems from resource asymmetry, divergent perceptions of the problem's impact, and notions of justice and fairness. Governments must take positions and develop detailed strategies and tactics in their continuous interaction with other players within this structure.

Climate change negotiations are highly contextual. For instance, the Fifteenth Conference of the Parties (COP15), the 2009 talks on which the simulations described in this article are based (explained more fully below), featured unique dynamics which will not be repeated again in any other negotiation. They followed a yearlong pre-negotiation process and were affected by various parallel negotiations, such as European Union (EU) summits. The highly contextualized nature of climate change negotiations presents methodological challenge for scholars trying to analyze cause-and-effect relationships.

Climate talks comprise a multitude of negotiation sessions in various settings. These separate and recursive rounds are connected by various kinds of backward and forward linkages. Negotiation is not always a linear process, so regressions are expected and may sometimes contribute to the robustness of a subsequent agreement. Round One, for example, can be organized so that it establishes a frame of reference for subsequent rounds.

The 1992 United Nations Framework Convention on Climate Change (UNFCCC) served as a point of departure for future negotiations in which norms and formal procedures were established. Persistent ongoing difficulties may also have made their first appearance here. For example, I believe that the ways in which countries were classified as Annex I, Annex II, or Non-Annex countries in the UNFCCC (which determines how mitigation burdens are to be distributed between developed and developing countries) might be limiting more flexible measures. In effect, these designations institutionalized the North-South divide. Developed countries (Annex I and II) are not willing anymore to commit unless developing countries (Non-Annex) agree to comparable mitigation commitments.

In addition to examining transcripts of negotiation sessions or to conducting interviews with negotiators, another method of examining negotiations contextually is via simulations. Simulations allow researchers

to test and retest hypotheses by repeating the same negotiation simulation multiple times, often altering select variables.

Because researchers cannot experimentally manipulate actual climate change talks, experts' policy recommendations involve speculation about the effects of the strategies that they propose. Recommendations are often based on observations of previous negotiation behavior and outcomes as well as the analysis of documents produced by these negotiations. But the linkage between cause and effect can be biased or distorted, and, therefore, causality cannot always be firmly established. For instance, progress may have been made via informal discussions that took place in the cafeteria during a break. Researchers may not have any way of including such informal talks in their cause-effect analysis. In addition, while causality is learned by experience, it is difficult to recommend alternative strategies to decision makers because there is no way of testing how they would have worked — it is harder to draw conclusions about what could have happened than about what did happen. Simulating negotiations allows the testing of alternative strategies.

Furthermore, simulation of negotiations offers a more flexible mode of generating knowledge. For example, strategy A is used to cope with structure X, whereas A is dynamic and X is static. A comprehensive analysis, however, should also consider the outcomes if structure X were also dynamic. Identifying relevant variables can be particularly difficult in such a multidimensional context. Simulation enables researchers to manipulate both strategy and structure.

In this article, I describe the results of several climate change negotiation simulation games that I have conducted. Each simulation game manipulates different conditions to test several hypotheses. In several cases, I was forced to abandon proposed strategies in the original plan and to adapt to the needs of each game. I observed the emergence of several stumbling blocks in each game that impeded the flow of the negotiation process. I immediately reacted by introducing measures to deal with these stumbling blocks. In some cases, I actively intervened in the process by giving individual simulation participants discrete instructions, and in some cases, I influenced independent variables to see how that affected process.

Via contextual simulation, this exploratory article seeks to develop a series of hypotheses and propositions that can serve as a preparation for a more general theoretical research work. In this article, I also seek to develop recommendations for decision makers based on the lessons learned from the simulation games. This article summarizes the most important of the negotiation-related difficulties (stumbling blocks) that I observed in these simulations and possible corresponding strategies to deal with them.

These simulations functioned as quasi case studies. Because of the context dependency of the COP15 negotiation as described above, the usage of control groups would not be expected to either confirm or reject

assumptions about causality. A strength of simulation games is that researchers can compare processes as a result of changed parameters and structures. The simulation of the COP15 can be repeated many times, and the result (e.g., agreement or no agreement) may be different for each run. The design of the game does not aim to predict the outcome of the negotiation; rather, the focus is on understanding *how* results are achieved and how variables interact. How do negotiators respond to the various structural conditions that they encounter during the decision-making process? Simulations can help researchers develop negotiation theory by enabling them to focus on the decision-making process and on the relationships between actors, between actors and structures, and even between actors and expected outcomes (e.g., self-fulfilling prophecy).

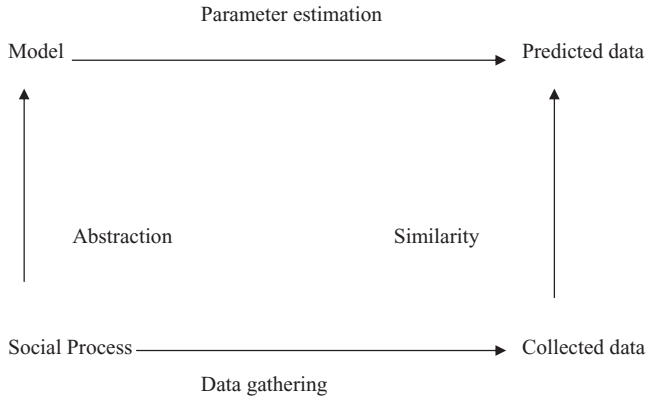
The use of comparative case studies is well accepted in social science. For instance, Barney Glaser and Anselm Strauss (1967) called for a comparative method for developing grounded theory. Admittedly, a comparative approach has limitations, particularly when the subject of research involves a context that is always unique in every case. The climate change negotiation is unprecedented, new, and is never identical to other contexts. But this weakness is less relevant for research if the focus is less on substantive issues and more on the structures and processes that generate certain common patterns of behavior.

Research Methodology: Modeling Social Processes through Simulation

Simulation is a particular type of data gathering using models to better understand a specific “social world” (or community) (Gilbert and Troitzsch 2005). Simulation games comprise interactive representations of a specific social world and how this world is perceived by participants. Participants behave according to the conditions set by the environment including the dynamics arising from interactions between participants. This experience can be used for learning purposes (Leigh 2003). The first step in conducting a simulation is to abstract a model from the social processes that researchers would expect to see in the targeted environment. These scenarios are snapshot constructions of reality and, therefore, do not claim universal generalizability. The game designer intentionally limits the scope of the model depending on the processes that she seeks to examine. Like a controlled experiment, simulation can be executed many times. The researcher can vary conditions to explore various parameters (Gilbert and Troitzsch 2005).

The second step is to compare the data generated through the simulation (simulated data) to the data generated from the real-life setting that is being studied (e.g., COP15). The third step is to evaluate the differences and similarities between the actual sets of results. The real COP15 negotiations have shown interesting processes and dynamics that can be compared

Figure One
The Logic of Statistical Modeling as a Method
(Gilbert 1993)



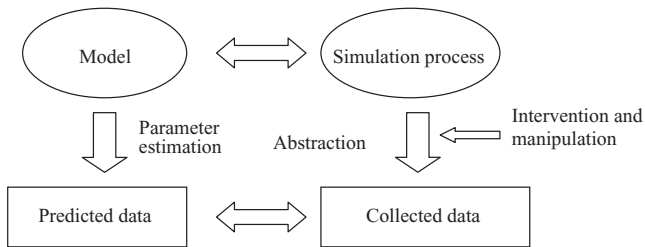
with processes and dynamics produced in the simulations. This evaluation enables the researcher to develop new theories, to expand or question existing ones, and to draw some conclusions and later offer recommendations about effective negotiation strategies.

Models developed via simulations can enable researchers to identify structures and interdependent relationships that operate within the system being analyzed. The researcher may actively affect and control the parameters in the simulation and then draw conclusions about how actors' behavior and decisions are influenced by changes in those parameters (Müller 1998). The next step is to observe how the manipulation of variables affects processes. Can they be manipulated? Can they be facilitated?

The researcher can change conditions during the simulation to shed light on the dependence of actors to the system. The participants assume roles and behave accordingly (Herz and Blätte 2000). Nigel Gilbert and Klaus Troitzsch (2005) wrote that the goal is to maintain a dynamic entity and to adapt to the environment. Models are too often constituted as "static" representations of the world, but a simulation seeks to reflect the dynamic character of the "world," by designing the model as an interactive, changeable framework of rules and possible actions. Adaptation requires actors to change their preferences and behaviors according to the changing premises of the system.

Figure One (Gilbert 1993) illustrates how the researcher conceptualizes a model through abstraction from presumed real-world social

Figure Two
Simulation and Modeling as Scientific Inquiry



processes. As the simulation runs, the actors adapt themselves to shifting parameters and frameworks. The researcher observes the impact of her manipulations on the actors, which generates her data. These data can later be compared with existing experimental and observational data.

Often, no set of mathematical or statistical equations exists that can be used to predict the characteristics of a given social system (Gilbert and Troitzsch 2005). And because researchers are not capable of collecting all the relevant information and because social relations are never linear in nature, no model can reliably predict future developments.

But simulations do not need to predict future developments to be useful. A model developed via simulation can help researchers to better understand causal relationships and the effect of interdependencies precisely because it limits the number of interacting components and enables a more precise focus on the impacts of specific variables.

Simulation is akin to an experimental methodology in several ways. Simulations have independent “inputs” entered by the researchers, drawn from formal theories. “Outputs” are the dependent variables, the actors’ observed behaviors as the simulation runs (Gilbert and Troitzsch 2005). The statistical correlation between variables is not the focus of simulation games, but rather the social processes and dynamics arising from the aggregation of selected actors (e.g., from different cultures, and professions), issues (e.g., multiple causation), structures (e.g., power asymmetry), processes (e.g., long-term orientation and coalition-building), and (expected) outcomes.

For the purpose of this article, I modified Figure Two (above) to best explain how simulation can generate general knowledge. The game master manipulates specific conditions to introduce dynamism into the process. For example, under the condition X, C leads to D if α is not employed.

The final step of the simulation process is to analyze the collected data and to use them to develop new models or refine existing ones.

The Climate Change Negotiations as Simulation Game: Reproducing Complexity and Uncertainty

Climate change negotiation simulations are not intended to reproduce the actual climate change negotiation system. Rather, they seek to create simplified scenarios that replicate specific discrete structures and interactions.

Climate change negotiations are complex, highly context-based, and always changing, and their uniqueness presents a challenge: attempts to use models from other negotiation cases such as the Doha trade negotiation round or nuclear nonproliferation negotiations may fail to generate enough findings applicable to climate change negotiations. Each international negotiation system (climate change, trade, etc.) comprises a distinct and autonomous negotiation process starting with pre-negotiation then evolving into agenda setting, negotiation for a formula and/or consensual knowledge and bargaining about detail, and closing with agreement, post-negotiation/implementation, and monitoring.

Each of the simulation games discussed in this article involve various scenarios from the COP15, which was a part of the UNFCCC held in Copenhagen in December 2009.

The following simulation games are discussed in this article (Table One):

Background: The Road to Copenhagen and Beyond

International climate change meetings first took place in the 1980s. The international scientific community organized the first meetings to bring to the attention of policy makers the potential severity of human-induced global warming. In 1985, the International Conference on Assessment of the Role of Carbon Dioxide and of Other Greenhouse Gases in Climate Variations and Associated Impacts called on policy makers to develop policies to mitigate climate change. In 1988, the World Meteorological Organization and the United Nations Environment Programme jointly established the IPCC (2012) to establish a scientific framework for studying human-induced climate change, its potential environmental and socioeconomic impacts, and options for adaptation and mitigation.

The First Assessment Report of the IPCC became the foundation for the International Negotiation Committee (INC) for a Framework Convention on Climate Change under the auspices of the United Nations General Assembly (resolution 45/212 of December 21, 1990). After several months of negotiations, the INC drafted the UNFCCC. The UNFCCC entered into force on March 21, 1994, and to date there are 195 parties to the convention.

As the main body of the convention, the COP promotes the implementation and reviews the effectiveness of the convention. During the 1997 COP3 meeting in Kyoto, Japan, the parties established regulatory

Table One
Simulation Games

International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria	June 24, 2009	Thirty-two Ph.D. students and 18 IIASA scientists
De La Salle University, Manila, Philippines	July 4–16, 2009	Eighty-eight B.A. students (three test groups)
Webster University, Vienna, Austria	May 26, 2010	Sixteen M.A. students
IIASA	June 21, 2010	Twenty-eight Ph.D. students and 21 IIASA scientists
Lviv Technical University, Ukraine	September 24, 2010	Twenty-one scientists and eight Ph.D. students
University of Cologne, Germany	November 27, 2010	Five B.A. students
University of Frankfurt, Germany	January 21, 2012	Nineteen M.A. students
University of Cologne, Germany	January 29, 2012	Sixteen B.A. students

instruments, which became known as the Kyoto Protocol. By signing the protocol, developed countries committed to decreasing their atmospheric greenhouse gas (GHG) emissions.

The COP15 to the 1992 UNFCCC met in December 2009 in Copenhagen to develop a mechanism for tackling rising GHG emissions after the Kyoto Protocol expires in 2012, but no binding agreement was reached at Copenhagen. At the final plenary session on December 18, 2009, however, delegates did agree to “take note of” the so-called Copenhagen Accord, drafted by the U.S. and a group of countries known as the BASIC bloc (Brazil, South Africa, India, and China).

The results of the Copenhagen meeting underscored the uncertainty of the future of climate talks. This meeting was supposed to be the end of a long road that started at COP11 in Montreal and was concretized by the “Bali Road Map” at the COP13 in Indonesia. The failure of COP15 to finalize a binding commitment raised the question whether the contradictory interests and opposing objectives among parties can be reconciled at all. Furthermore, some questioned whether the United Nations with its consensus rule still provides the appropriate framework for such complex negotiations.

Because of these and other important questions, the COP15 is an interesting analytical subject for negotiation scholars. This analysis raises

the question whether climate negotiations need to be conducted more effectively. Would a “better” process produce “better” and more far-reaching results? In sum, would adopting measures and strategies to make the climate negotiations more effective be a valuable investment?

The COP15 Game: A Learning Curve

I simulated the COP15 negotiations on more than 18 occasions in 2009, 2010, and 2012; eight of these are described as representative samples in this article. (See Table One above.)

Simulation participants were primarily given roles representing states. In some test groups (International Institute for Applied Systems Analysis [IIASA] 2009 and 2010, De La Salle, Lviv), participants were also given roles representing non-governmental organizations (NGOs). Although NGOs have not been engaged in actual negotiation, in these games NGO role players were encouraged to use media and protest actions to bring their message to the attention of negotiators via, for example, written notices and posters. This element was added to the simulations so that participants would experience how NGOs manage to pressure negotiators, although they are not present in the plenary sessions at all. In Copenhagen, NGOs were present in the Bella Center where the talks were held; however, they did not generally have access to the negotiation room.

I also assigned inside and outside rapporteurs to each of the simulation groups. Inside rapporteurs were participants who played state roles. Prior to the game, they were given a list of questions, about their subjective experience during the game. Outside rapporteurs were nonparticipants to the negotiation; their only task was to observe the meta-level of the negotiation process. (The roles of the rapporteurs are described more fully later.)

In most cases, one person was assigned to play a negotiator representing just one state because the focus of the games was decision making in an international context. I assumed that assigning two or more persons to one party would unnecessarily increase the complexity of the process. In all test groups, however, the Danish chair was always played by two participants to avoid too much burden on one person.

The information provided to participants described the session’s goal, which was to produce language for the draft resolution focused on the mitigation of climate change (assigned amounts, percentages, year of level, and commitment period). The state negotiators were charged with determining the percentage reduction of GHGs that their governments would agree to reduce nationally to reach global targets (e.g., 20 percent). They were also required to determine whether this percentage reduction would be applied only to developed countries or to developing countries as well, which year would be the base year for determining acceptable levels (e.g.,

1990 levels), and within what time frame (e.g., by 2020), the reduction should take place.

Although almost none of the participants were native English speakers, the simulations were conducted in English. Unlike in the real negotiations, no simultaneous translation was provided for the participants of the game. Supporting materials and documents such as the Summary for Policy Makers of the IPCC's Fourth Assessment Report as well as the country profiles and instructions were in English, which created communication challenges for the participants. The debriefings at De La Salle and Cologne (2010), however, were conducted in Filipino and German, respectively. Furthermore, students were allowed to write their negotiation journals, which are their personal reflections about their negotiation experience, in either English, German, or Filipino.

All state parties also received confidential instruction sheets that contained their positions, background information, and recommendations on how the negotiator might choose to behave during the simulation. In preparation, I profiled more than 30 countries using both primary and secondary sources. (Appendix One to this article illustrates the confidential information sheet for the Philippines.)

Each negotiator remained free to choose his own methods to fulfill the interests of the national government he was assigned to represent, but those choices were somewhat constrained by the facts listed on the confidential information sheet. The profiles included the best alternative to a negotiated agreement (BATNA) for each country to enable the participants to decide for themselves whether a proposed agreement was acceptable or not. For instance, the Bangladeshi negotiator was instructed to prefer bilateral negotiations in contrast to the preference of the majority of developing countries. Some countries may have opted for a more collaborative approach while others may have opted to delay the negotiation process because the government anticipated that it would be in a better position at the later stage. In addition to the confidential instruction sheet, the state negotiators also received confidential "memos from the capital" through which I was able to intervene in the process during the running of the simulation to test other hypotheses.

Table Two (below) summarizes the similarities and the differences between the eight games analyzed here, as well as the initial structural conditions that define the simulation design, and the conditions that were added and manipulated in the course of the game.

I have evaluated the simulation games in several ways. Prior to the game, one or two state negotiators were asked to fulfill the role of the "rapporteur from *inside* the process." These rapporteurs answered questions they received on paper after the game. During the evaluation round, they provided insights about their experiences as a negotiator. Samples of these questions are the following:

Table Two
The Simulation Design

	De La Salle University, July 14-16, 2009	IIASA, June 24, 2009	Webster University, May 26, 2010	IIASA, June 21, 2010	Lviv Polytechnic University, September 24, 2010	University of Cologne, November 27, 2010
Number of profile of participants	Eighty-eight B.A. students (all Filipinos)	Thirty-two Ph.D. students and eighteen IIASA scientists (from 20 countries)	Sixteen M.A. students (from ten countries)	Twenty-eight Ph.D. students and twenty-one IIASA scientists (from eighteen countries)	Twenty-one scientists and eight Ph.D. students (from twelve countries)	Five B.A. students (from four countries)
Game duration	Total of six hours	Total of four hours	Total of three hours	Total of four hours	Total of four hours	Total of two hours
Goal of negotiation	Language to resolution	Language to resolution	Language to resolution	Language to resolution	Language to resolution	Language to resolution
Level of expertise of participants about climate change	Low	Medium to high	Low	Medium to high	High	Low
Negotiating actors	Twenty-two countries and twenty-four NGO groups	Twenty-six countries and eighteen NGO groups	Sixteen countries	Twenty-eight countries	Twenty-five countries and four NGO groups	Six countries
Event	COP15	COP15	COP15	COP15	COP15	COP15
Procedure/structure	Bilateral and multilateral negotiations with chair	Bilateral and multilateral negotiations with facilitator	Bilateral and multilateral negotiations with mediator	Bilateral and multilateral negotiations with facilitator	Bilateral and multilateral negotiations with chair	Bilateral and multilateral negotiations with chair
Issue (agenda)	Percentage, base year and commitment period of binding/non-binding emission reduction Three negotiation groups: Group One: best students of the batch (in terms of academic performance) Group Two: an outsider as chair, Group Three: a college professor as chair, no intervention during the negotiation Group One: "almost an agreement," Group Two: far from an agreement, Group Three: agreement (binding reduction)	Percentage, base year and commitment period of binding/non-binding emission reduction One negotiation group with active participation of observers (NGOs); clear membership to coalitions	Percentage, base year and commitment period of binding/non-binding emission reduction One negotiation group with the chair using the Harvard Concept of negotiation	Percentage, base year and commitment period of binding/non-binding emission reduction One negotiation group with strong intervention in the process (e.g., constant distribution of instructions from the capital), limiting the autonomy of negotiators, enhanced communication channels between parties "Chaos," far from an agreement	Percentage, base year and commitment period of binding/non-binding emission reduction One negotiation group with "stand-by" scientists supporting the process, including one person from the UNFCCC	Percentage, base year and commitment period of binding/non-binding emission reduction One small negotiation group disenabling intra-coalition negotiations
Process-related modifications						
Outcome		"Almost an agreement"	"Almost an agreement"		"Almost an agreement"	Far from an agreement

-
- How did you feel about the other players? Did you dislike someone in particular? Did you like someone in particular? Why? Did you feel that your voice was heard?
 - Which actors dominated the negotiation? What resources were available to them to enable them to dominate the negotiation?

Furthermore, I also chose one or more “rapporteur(s) from *outside* the process” prior to beginning the game. These observers were not allowed to communicate with any negotiating party. They were asked to answer questions that dealt with their experiences of the game as impartial observers rather than players. Questions included:

- Did you witness bias in the negotiation?
- What were the difficulties in the negotiation?
- What do you think could have been done to reach a consensus?

Finally, I assumed the role of discussion moderator. All participants, including those who played the role of NGO observers, were invited to join the discussion. Questions asked during the evaluation round of the game included:

- What different notions of justice and fairness were you able to recognize in the negotiation? (Please give some examples of relevant statements.)
- Do you think that gender played a role in the negotiation? If yes, give some observations that according to your own understanding indicate stereotypical masculinity and femininity at the negotiation table.
- Which countries seem to be delaying the negotiation process? What specific examples were you able to observe in the negotiation?
- Which countries are seeking to alter the *status quo* and which countries want to maintain it? What do you think is the motivation behind such a preference? Please give an example based on the negotiation.
- Do you think emotionality played a role in the negotiation? Could you give a specific situation from the negotiation that shows the significance of emotions?
- Are you able to find a situation in which Denmark as chair acted as a mediator between parties? Is there a situation where you think the Danish chair was biased?

The Game Analysis: Identifying Stumbling Blocks

My analysis of the eight games and how they proceeded reveals interesting findings about the process that could help negotiators better manage the

climate change negotiation process. Specifically, I identified several stumbling blocks that may have hindered the real-world climate change negotiations.

Negotiation Episodes: Structuring the Process

The duration of the game ranged from two to six hours and began at midpoints in the negotiation. During the debriefing, the participants in all groups mentioned that they needed time to “warm up” in the negotiation game. Some reported that they lacked “institutional memory” of the negotiation. For instance, they needed time to get to know the personal traits of their counterparts (“reputations” of negotiators) as well as the countries’ individual positions.

The truncated nature of the simulation — participants “jumped in” without the benefit of participating in the pre-negotiation activities that their “real-world” counterparts were involved in — was disorienting for participants. The game was not primarily designed, however, to reproduce the real negotiation but rather to shed light on the difficulties that negotiators experience in the negotiation process. Negotiators need to undergo and understand the various phases to effectively structure the negotiation process. For instance, pre-negotiation can help open up communication channels between negotiators (both at the national and at the international level) or build consensus knowledge (both in the scientific and in the political community). For example, COP meetings require preparatory meetings to clarify issues and coordinate policies between members of a coalition. Although such preparatory meetings are not formally mandated by the UNFCCC, these meetings can be used by countries to harmonize their positions, which can facilitate the next COP meeting.

Tactical considerations with a short time frame cannot sufficiently address the needs of a long-term regime-building process. This process is a continuing recursive process with backward and forward loops. COPs and other climate talks are interconnected and interdependent. A well-known example is the connection between the 1992 UN Framework Convention on Climate Change and the 1997 Kyoto Protocol. The negotiation process to create a post-Kyoto mechanism for mitigating climate change builds on the norms and rules established by the Kyoto protocol. For example, negotiators at the COP15 used the language of the UNFCCC to defend their positions. During the simulations, participants had limited opportunity to refer to other climate talks. The simplified model of the simulations circumscribed the influence of linkages. This may have negatively influenced the course of the simulated negotiations. In all games, the participants felt that they were missing information from previous rounds that they could have used to support their positions.

Anchoring and Expectations

In all these simulation games, the intended outcome of the negotiation was to secure emission reduction commitments through a draft resolution that

would replace the Kyoto Protocol. All negotiators were shown a draft resolution, but the draft resolution's provisions created bargaining anchors. In those simulations in which the first draft proposal was very ambitious, participants reported that it presented credibility problems for those negotiators making the proposal and generated intense resistance by other parties. Frustration tended to be higher. In all eight games, European countries were instructed to begin with ambitious, high anchor positions (e.g., 40 percent carbon emission reductions with a base emissions level year of 2000 to take place by 2020). These opening positions were opposed by developing countries who doubted the sincerity of the European countries who had, in the past, regularly agreed to commitments that they then failed to implement.

When the initial proposal was less ambitious, which implied that the proposing parties had low expectations of reaching consensus, the bargaining was less intense; however, reaching an agreement was still not easy, and deadlock was just as likely. Low expectations that an agreement would be reached created an environment that was not conducive to an agreement.

Different sets of strategies are required when negotiators' expectations are more optimistic. In the game, EU countries began with high expectations. When it became clear that the interests of the countries were too divergent, the participants began to show their frustration. In all test groups, the participants playing the European countries felt the need to formulate and coordinate a new set of strategies as prospects for a favorable outcome for COP15 began to wane. At this point in the game, European negotiators called for more informal breaks for more consultations.

Extreme pessimism is at the other end of the expectation spectrum. Low expectations about the conference's capability to reach a global agreement led participants to be less willing to compromise. In the game, the participants playing negotiators from such countries as Canada, Japan, and the U.S. expected that there would be no binding agreement at the end of the negotiation because of "irreconcilable" differences among countries and stated that this diminished their motivation to cooperate and compromise.

In the real COP15 negotiation, the EU countries had been optimistic for so long about the outcome of the Copenhagen talks and did not have time to change their negotiation strategies when they became aware of how unrealistically high their expectations had been.

Framing Negotiations: Problem Solving or Power Game?

The negotiation agenda (to agree on the percentage of carbon emissions to be reduced) was designed to keep the negotiations on track. But to increase issue complexity, the game design encouraged some countries to diverge from the agenda and insist on discussing other issues such as technological transfer. For instance, the willingness of developing countries to accept binding commitments was made dependent on how much financial

assistance they would get from developed countries in terms of mitigation technologies. The chairs were particularly confronted by the difficulties brought by the interlinkages of issues.

In the game, these interlinkages of issues constrained the structure of the negotiation process. The different test groups reacted to this difficulty in different ways. In Group One at De La Salle University, the negotiators strayed from the agenda and became entrapped in discussions about technology transfer because the chair, in an effort to not unduly influence the negotiation process, failed to keep them focused on the agenda.

The negotiators in Lviv thought that they profited from the predetermined agenda (percentage). They felt that the negotiation process was more effective because a more structured negotiation round gave them more resources to concentrate on technical issues. The Lviv participants were primarily scientists who had a higher level of climate change expertise. The lack of confidence-building pre-negotiation activities seemed less detrimental for this test group because scientists viewed the climate change negotiations as a technical problem. This was in contrast to other participants, particularly in Frankfurt (2012) and Cologne (2012), who seemed to view the negotiation process as a power game. The majority of the participants in Frankfurt and Cologne were political science students.

The participants with a problem-solving orientation were more likely to see other parties as part of the solution and to understand why some issues were regarded as toxic. Having a common goal meant having common problems. For instance, the Lviv negotiators easily came up with a common goal (2°C) that gave each negotiator the feeling that they were “in the same boat.” Their more integrative, value-creating approach at the bargaining table contrasted with participants in Group Two at De La Salle University and, to a lesser extent, with participants at the University of Cologne (2009) who were more likely to perceive negotiation as competition. In these two test groups, the regional competition between India and China was manifested at the negotiation table. The participant playing the role of the negotiator from India found herself uncomfortable with the participant who played the role of the dominant Chinese negotiator. In this simulation, the bargaining orientation was distributive with Country A perceiving that Country B’s win was automatically its loss.

The Role of the Chair

A highly facilitative mediator took part in the simulation game at Webster University. In mediating the negotiation, she attempted to use some of the concepts of “principled negotiation” as developed by Roger Fisher and William Ury (1981), carefully documenting both the positions and the interests of the negotiating parties. She helped the parties effectively communicate these interests so that all parties would better understand each

other's concerns, which nurtured a more collaborative environment. As the professor of the participating students, the mediator was seen by them as legitimate and authoritative.

In the simulation game held at IIASA in 2010, the Danish chair, played by two participants, was regularly criticized by several participants who perceived them as partial to certain countries. The chair moderated the plenary debates and often failed to give representatives from specific nations the chance to speak. This was not intended in the game design. The two participants representing the chair argued that it was not their intention to overlook certain states, but that they intentionally gave some countries more speaking time than others in an effort to constructively advance the negotiation process. When asked about what specific criteria they were using in determining who could speak, they said that it depended on whether they perceived the content of the talk was likely to bring the negotiators nearer to an agreement.

In the games at the University of Frankfurt (2012) and at the University of Cologne (2012), all participants argued that the chair should have fulfilled the role of a more active facilitator and should have been prepared to take over more control of the negotiation and be resistant to the sabotage of spoilers. Interestingly, the chair's reluctance to intervene more actively led to her loss of credibility, although the participants did acknowledge how difficult it was for the chair to manage a comprehensive overview of all the negotiators' complex positions. The participants representing the chair were aware of what they were supposed to do but were hesitant to actively facilitate the negotiation process because they feared that doing so would precipitate the withdrawal of some countries, particularly because Denmark was itself pursuing its own specific position.

Interestingly, the chairs in all test groups experienced this dilemma. Both manipulative and passive chairs were highly criticized and were partly held responsible for the failure to reach binding agreements. Nevertheless, as the results of the simulation at Webster University (2009) indicated, a facilitative chair may be highly appreciated particularly when representatives of leading industrial countries fail to display political leadership.

In the real COP15 negotiations, the chair had a fixed plan that a final agreement would be in place before the end of the conference, which led to inherent inflexibility in managing the process. For example, to save time, there were insufficient consultations with countries outside the inner circle of the leading nations. When the "Danish text" was leaked, several countries protested, and this appears to be one of the reasons that the developing countries (primarily African) walked out on December 14 (Greenbang: The Smart Technology Network 2009; Vidal 2009), which delayed the negotiations for almost a day. With the background of Europeans facing open distrust in the developing world, the leaked "Danish text" led the

developing countries to accuse the developed countries of working behind closed doors to make an agreement without their consent.

Negotiation Setting: Finding a Negotiation Formula

During each simulation, discussions unfolded in both formal and informal sessions. Plenary sessions were formal, while informal negotiating took place during breaks in the plenary sessions. Agreements made during the informal sessions required simple majority vote, but a consensus was needed during formal sessions. Parties also sometimes spoke informally with other parties without asking for an official break (informal-informal).

For example, at the IIASA (2009) simulation, the participant playing the role of the U.S. representative invited the participant playing the role of the Canadian representative to leave the room to discuss proposals while the plenary discussions continued. Other negotiators criticized this move, arguing that it undermined the multilateral nature of the COP meeting. Therefore, when the American and Canadian negotiators proposed a language for the draft resolution, the majority of the other states opposed it, not because of the substance but mainly because they did not like the way the two countries came up with the proposal, as the participants explained during the debriefing and in their journals. In this case, the procedure determined the outcome. The participants who played representatives of the smaller countries told us that they believed that the American and Canadian negotiators were not interested in hearing their statements, and thus any decision made by the two countries lacked credibility.

Some of the simulation participants told us that they found bilateral talks to be more efficient and less ambiguous than multilateral talks because it was easier to immediately ask for clarification to compare how specific terms are understood and to establish personal trust between negotiators. They also reported that the important issues were usually discussed in informal talks, where it was easier to avoid strict protocols, and countries retained the option to back out afterwards. In the games, several negotiators were only willing to make concrete pledges during breaks. In addition, one participant at the University of Cologne (2012) reported that it was easier for him to collect necessary information and to distribute information through informal talks because he could choose negotiators whom he thought would be most helpful.

Coalition Building: Complexity of the Process

Most of the simulation games comprised participants representing more than fifteen countries to replicate the complexity of actual multilateral negotiations. In this context, coalitions often emerged. In the two simulations at IIASA, the predetermined coalition configuration was outlined in the instruction sheet. This modification led to more intra-coalition negotiations and less coalition fluctuation than in the simulation at De La Salle University. For the simulation held at IIASA in 2009, more than 75 percent

of the total negotiation time was allotted to intra-coalition negotiations because of the diversity of the interests of the members of the coalitions. For the Webster University simulation, more than 75 percent of the total negotiation time was spent at the plenary because that was the preference of the facilitator.

The simulation at the University of Cologne (2009) involved only five countries (the U.S., United Kingdom, Russia, China, and Sudan), with each representing a major bloc. In this simulation, intra-coalition negotiations were disabled, but there was no explicit prohibition against forming coalitions. Nevertheless, these five countries did not form obvious coalitions because of the huge differences among their interests. More than 75 percent of the total negotiation time was spent in bilateral talks.

The simulation at the University of Cologne (2009) involved a less structured negotiation session. In that game, there was a shift from multilateral talks to a series of diffuse bilateral negotiations. Countries bilaterally consulted with their counterparts and were successful in finding mini-agreements.

It became clear in the simulations that coalitions fulfill specific roles in the negotiation process. At the University of Frankfurt (2012), the participants noted that coalition building was issue-oriented. One group was the “spoilers” (Sudan, Nigeria, Japan, U.S., and China), another was the “willing” (European countries), another was the “newcomers,” including India and Brazil, and the “stand-alone” Grenada who chaired the Association of Small Island States. The participants agreed that one cause for failing to reach an agreement was that coalition formation was carried out during the negotiation, and not before it. Thus, coalition members did not have the opportunity to develop personal relationships. During inter-coalition talks, countries spent more time presenting and elaborating their interests among each other than formulating common strategies. Because of this, most of the countries resorted to “partnerships” (e.g., China with the U.S., India with Brazil, Germany with Sweden, and Nigeria with Sudan).

Interestingly, participants displayed the same preference for partnerships over big coalitions during a simulation at the University of Cologne (2012), but these partnerships changed several times depending on the issue. For instance, when the topic was intellectual property rights, China and Brazil formed partnerships because of their common interests. In terms of binding reduction targets, China felt more comfortable partnering with the U.S. Furthermore, in both test groups, China did not use the G77 group of developing countries coalition at all to pursue its interests, compared with the test groups in IISA (2009, 2010) and Lviv. Nevertheless, in both test groups, while partnerships were generally accepted, the partnership between China and the U.S. generated protests from other countries.

Without coalitions, parties must know all the issues at the negotiation table. This is a huge financial and capacity challenge particularly for

developing countries. Coalitions enable negotiators to focus on specific issues that are most relevant to them while still having access to knowledge in other areas when needed. Coalitions can be used to gather information and to coordinate the distribution of knowledge among members. Although most of the countries had prioritized issues beforehand, they were still keen to gain information about issues they had not prioritized because some information could still be useful to formulate strategies. Coalition building is thus a capacity-building mechanism, especially for developing countries.

Furthermore, coalitions functioned as mechanisms for moderating some of the parties' more extreme positions by channeling discussion of extreme positions from the plenary to the coalition meetings. While some countries in a coalition presented extreme positions on a specific issue, others within the coalition maintained more "pragmatic" positions. The participants at the University of Cologne (2012) and Frankfurt (2012) agreed that coalition meetings served as preparation for the formal meeting. They realized that their interests were at first too diverse and too many for a plenary negotiation.

For each of the three simulations at De La Salle University, coalitions were not predetermined, and participants were able to form coalitions according to their own preferences. Different sets of coalitions emerged during the simulation of the third group than had emerged in the first two groups. Group Three formed coalitions comprising both developed and developing countries. The North-South divide as a coalition paradigm (Penetrante 2010) was not present in this simulation at all. Instead, the participants formed coalitions based on regional locations and historical connections. Southeast Asian countries — as well as China, Korea, and Japan — established their own coalitions. African countries presented a unified position as well as European countries. While regional coalitions may reinforce a North-South divide, the issues presented at the negotiation table did not focus on historical injustices, which could have framed the question of who should carry the burden of emission reduction. One reason may be that the negotiators did not have a general overview of the interests of the others. Therefore, they opted for regional and historical ties as determinants of coalitions. The coalition-forming process was dynamic, and some countries changed membership many times during the simulation.

The Role of NGOs

Several researchers have analyzed the role of NGOs in negotiation processes (Princen and Finger 1994; Potter 1996; Newell 2000). The participation of civil society groups is inevitable in the climate change negotiations given the "high degree of public interest in, and concern over" the issues involved (Depledge 2005: 10). Pamela Chasek (2001: 29) has written that

NGOs are “increasingly serving as a catalyst” to initiate environmental negotiations. Global environmental negotiations tend to be more open to the public than negotiations on other issues such as trade or security (Depledge 2005).

The UNFCCC (Article 4, Paragraph 2, Section i) describes the role of NGOs and other civil society groups in the climate talks. The modes of engagement of NGOs can include activism, advising, observing, legitimating, monitoring, and indirect negotiation. NGOs can advocate on behalf of the issues they want policy makers to address. They may provide knowledge to policy makers (e.g., scientific community). As observers, NGOs can address processes and monitor reached agreements. They may actively frame domestic public opinion and influence the position of countries by providing legitimacy; they may also seek to delegitimize negotiators. For instance, the Climate Action Network’s (CAN) 700 member organizations regularly judge the “Fossil of the Day” award and give them to countries who have “performed badly” in the climate change negotiations (CAN 2012). Furthermore, individual NGO members may be part of national delegations, thus indirectly participating in negotiations.

Not all NGOs act in support of the negotiation process. Many scientific organizations have advocated the need to urgently address climate change, but some NGOs actually seek to obstruct the negotiation process, such as those representing industrial sector interest groups, who may seek to delay the implementation of emission reduction targets that could adversely affect their revenues.

NGOs do not actively participate in COP meetings, but they have organized exhibitions, distributed written materials, and invited negotiators to lectures delivered by such prominent individuals as South African civil rights activist Reverend Desmond Tutu or former U.S. vice president and environmental activist Al Gore. NGO representatives also have the opportunity to speak to negotiators in the exhibition area.

In designing the simulations, I planned for different kinds of external pressure to be exerted by NGOs and other advocacy groups. For the 2009 simulation at IIASA, NGOs were given a very active role, which changed the dynamics of the game. Both students and scientists were given profile instructions similar to country negotiators. The game involved NGOs such as Greenpeace, the Centre for Science and Environment, the World Wildlife Fund, the International Air Transport Association, Migrante International, the Women’s Environment and Development Organization, and the International Chamber of Commerce, which were heterogeneous in terms of interests. These NGOs actively advocated for their own and sometimes mutually exclusive interests such as human rights, protection of industries, sustainable development, and environmental justice.

The state negotiators at the IIASA (2009) simulation were more open to the lobbying of NGOs than were the negotiators at De La Salle University.

The IIASA scientists playing the role of state negotiators in particular communicated actively with NGO representatives. They stated that they had felt pressured by receiving the “Fossil of the Day Award” given by NGOs belonging to the CAN — particularly because of their personal involvement in environmental research.

On the other hand, the simulation at the Lviv Polytechnic University involved scientists playing the role of “experts on stand-by” available to answer questions and to provide additional information to the already knowledgeable negotiation parties. In this game, the role of the NGO participants, who represented research organizations such as the IIASA or the Energy and Resources Institute, was to provide scientific information to negotiators and to refrain from actively advocating and influencing decision makers. The negotiators in this simulation focused on finding a “technical” formula to resolve the conflict between developed and developing countries and reported that they felt less pressure from the outside than did participants in other simulations in which the outside pressure was more overtly political. These “experts on stand-by” refrained from any form of advocacy or pursuing self-vested interests and provided only scientific input to the negotiation process and only when they were asked to by negotiators.

The Two-Level Game: Endogenous Interventions at the Negotiation Table

The degree of process intervention varied among the different simulations. The negotiators at the De La Salle University simulation received instructions beforehand, and the game master refrained from intervening during the game. Once the negotiation started, no additional changes were made to the country profiles. The simulations at Webster University and IIASA in 2010 were different: they involved a process with constant intervention as I regularly changed the parameters of the game. The negotiating parties received “instructions from the capitals” every now and then. At Webster University, I chose these interventions in response to participants’ obvious lack of relevant background knowledge. I distributed “memos” to the participants in situations in which I thought that they were not aware of the consequences of their concessions. For instance, the negotiator representing the U.S. made an early statement supporting binding emission reductions to show leadership and goodwill. Immediately, she received a “memo” stating that the U.S. Congress would not ratify any agreement involving binding commitments. She eventually backed down from her previous statement.

Once I discovered the interesting dynamics that followed receipt of these “memos from the capital,” I created more analytically motivated interventions for the games that followed. At the 2010 IIASA game, for example, the memos represented one aspect of the complexity of the negotiation

process: the dynamic flow of information and policy making. Some of these memos instructed participants to change positions during the course of the negotiation, limiting their bargaining flexibility and increasing their need for ambiguity. Some of these interventions reflected changes in domestic public opinion.

Negotiators who become aware that they may need to shift direction in response to such interventions may feel the need to develop alternative strategies or “escape routes.” Being ambiguous, particularly in the early stages of negotiations, can be seen as an effective strategy by negotiators to accommodate changes. For instance, the participant in the role of the Indian representative at the IIASA (2010) made a concrete commitment at the plenary at a very early stage. Immediately, I gave the Indian negotiator an instruction to drastically reduce India’s commitment because of the reversal of government policies. The Indian negotiator then secretly convinced the Brazilian negotiator to make a proposal that reflected the “new commitment” from the Indian government without obviously changing the Indian position at the plenary to save India from losing its credibility. The Indian negotiator also became more careful in expressing commitments in the later stage of the simulation.

Information Overload: Knowledge Asymmetry

During the simulation at IIASA in 2010, parties exchanged a flurry of notes. In addition to all their face-to-face formal and informal sessions, the parties were in constant communication via these notes. This enhanced communication proved detrimental to the negotiation because it distracted the negotiating parties from the plenary discussions. This result suggests that communication channels need to be coordinated to prevent “information overload” among negotiators. Particularly in the climate change context, negotiators are confronted with huge loads of information, not only about climate issues but also about such linked issues as security, trade, economic development, and health.

The participants’ level of climate change expertise varied from simulation to simulation. The participants in the simulations at De La Salle University and at the University of Cologne (2009, 2012) were undergraduate students with limited knowledge of climate change; they were given information and reading materials one month before the simulation. But the simulation at the Lviv Polytechnic University involved scientists with expertise on GHGs. Because they had similar levels of expertise, these scientists participating in the simulation believed that they were “speaking the same language.” Because the agenda of the negotiation was predetermined, they were able to develop more concrete proposals than were participants in the other simulations.

The students from De La Salle University ranged in age from sixteen to eighteen and lacked expert knowledge on the technical issues involved in

the climate talks. But it seems that this lack of expertise was not a huge stumbling block as expected because, again, there was symmetry, and they were able to communicate with each other. Although the discussion was less technically sophisticated than at the Lviv game, the decision-making process was still clear. The focus of the debate was not on technical issues, which were creatively disregarded by the participants, but on socio-political issues such as justice, fairness, and trust.

During the three simulation games at De La Salle University in which nonexperts participated, a more classical bargaining was observed. These participants seemed to view the negotiation as a political problem. Some participants applied the classic “tit-for-tat” method in bargaining. Others tried to dominate the others to persuade them to agree with them. Their lack of expertise seemed to aggravate their uncertainty about possible outcomes. And without full knowledge of what their decisions would mean in the future, the less knowledgeable parties opted for “no.” Without knowledge about the consequences of their decisions, these negotiators are not able to calculate their BATNA or reservation value. Therefore, they chose stalemate. Their reasons for rejecting proposed solutions was not that those proposals would not bring pay-offs, but because they were uncertain what the outcome would be for them.

In the two IIASA simulation games, the professional and academic background of the participants was diverse, and consequently the asymmetry between participants’ knowledge was significant. Some were energy experts, others were statisticians, biologists, physicists, or engineers, and a few were social scientists. They found it difficult to speak the same language, although most of them are connected in some way with environmental science. This underscores that there is little homogeneity among environmental scientists.

Reasons for Failure

Except for the third simulation at De La Salle University, no proposal achieved consensus. Although the simulations were not intended to actually produce an agreement, the participants nonetheless hoped that they might do so. The first simulation group at De La Salle University reported that they were close to agreement and blamed the lack of time for their failure to reach a consensus. Like the participants in the 2009 IIASA and the Lviv simulations, they reported that if given more time and perhaps more negotiation rounds to play, they would have reached a consensus. The participants from the University of Cologne (2012) reported that they were so close to reaching agreement that they repeatedly ignored my instruction that the game had ended. They were proud that although they did not reach a global agreement with binding commitments, they were able to reach several bilateral agreements.

The participants in the 2010 IIASA, University of Frankfurt (2012), and University of Cologne (2009) simulations reported that they were far from reaching an agreement. When asked why, they cited the following factors:

- *Their lack of knowledge and expertise about climate change issues.* Their uncertainty about the implications of proposals prevented the negotiating parties from making commitments and prompted them to say “no” to everything that they could not understand. Decision makers need mechanisms to help them “structure” uncertainties so that they can make decisions comfortably.
- *Too many parties at the table.* Participants stated that they thought it would have been possible to reach an agreement if the number of parties had been drastically reduced.
- *Coalitions that took the negotiation “hostage”.* Framing the climate change negotiations as a North versus South (developed countries versus developing countries) conflict is detrimental to the process. Although coalitions such as the G20 and G77 were partly helpful as “negotiation vehicles,” focusing the question of who should shoulder the cost of emission reductions based on historical responsibility for past injustices creates a win-lose paradigm.
- *Lack of shared goals.* The negotiating parties did not share a common goal because each mainly pursued the interests of their states. The elevation of national interests at international talks led to stalemate.
- *Chair impartiality.* On one occasion, the chair was seen as partial. The Danish chair at the 2010 IIASA simulation was seen as biased against certain countries, which precipitated such disruptions as, for example, a walkout from the plenary by the Nigerian representative.
- *Position taking.* The representatives of developing countries stated that they had the feeling that they were not allowed to express “positions” by demanding specific concessions from the developed countries. This position making was highly criticized by the participants representing the developed countries. It was labeled as “egoistic” and counterproductive to the negotiation process. The participants identified a bias. When developing countries linked development to their positions on mitigation, developed countries responded by referring to these as outside the negotiation agenda. But when developed countries linked their mitigation commitments to the willingness of developing countries to mitigate, there was no discussion that this conditionality was outside the agenda. But both positions are equally driven by notions of justice and fairness.

Conclusion: Systematic Learning from Experience

For climate change negotiations to be effective, negotiators must cope not only with the complexity of the substantial scientific and technical issues involved but also with the complexity of the negotiation process and with the uncertainty of the negotiation outcomes — negotiators should be prepared to cope with the complexity of the process *before* they undertake it. I suggest several tools that could be used to deal more effectively with this complexity.

Strategic Facilitation

These simulations are not intended to reproduce the reality of climate change negotiations or to test current theories but to develop and redefine hypotheses and propositions that can be tested with further research. The games identified several stumbling blocks that can impede the negotiation process from achieving sustainable and effective outcomes. While several experts propose the establishment of professional mediation bodies, I suggest a different approach. Mediators may confront the same stumbling blocks and even exacerbate the intractability of the conflict by further complicating the decision-making process. Alexis Gensberg (2003) has proposed the creation of a corps of United Nations facilitators who are skilled in consensus building, which could help build a framework for treaty making. She argues for the assistance of a “process manager, who helps guide parties through identification of important issues and the linking of those issues so that parties can compromise on those of lesser importance while making gains on those of greater magnitude” (Gensberg 2003: 80).

While using professional mediators could be helpful, a more effective approach may be found in identifying already existing mechanisms that, if reframed or reorganized, could better facilitate the existing process. The introduction of professional mediation would not address structural, issue-based, process-oriented, and outcome-linked impediments. For instance, how can professional mediators assist state negotiators to cope with power asymmetry or with the failure of developed countries to fulfill their previous commitments?

A more effective approach, I believe, would involve the conceptualization and eventually the formalization of *strategic facilitation*. Strategic facilitation would involve intervening in the climate change negotiation to enable states to cope with the complexity of the negotiation process and uncertainty of the negotiation outcome. It would seek to create conditions conducive to reaching and implementing an agreement. It does not specifically mean the establishment of additional bodies or the engagement of additional actors, but merely managing existing process-related conditions in a way that negotiators can cope with identified stumbling blocks. It would include several measures described later.

Reframing the North–South Divide

The simulation participants noted the role of the North–South divide in preventing the achievement of any agreement. Because of the veto power of such developing countries as China, India, and Brazil, as well as some leading industrialized countries such as the U.S., Canada, and Australia, climate change negotiations are currently in a deadlock. The North–South divide has been perceived as a major stumbling block in reaching a global agreement. Politics is blamed for failures, and experts propose moving away from the North–South paradigm (La Viña 1997). Politics, however, is merely the expression of positions that are based on specific interests. Politics in the climate change negotiations is a social reality, and coping with it represents a more practical approach than ignoring it (Penetrante 2010).

Thus, I argue that reframing the North–South divide is a precondition for reaching any global deal (Penetrante 2010). Instead of assuming the concept of the North–South as it was understood in the 1980s and 1990s, I argue we should reconceptualize the North–South not as a divide but as complex relationships. The North–South divide merely confirms diverging positions of countries based on their perceptions of their interests and their expectations of how others will behave. Furthermore, the North–South divide refers to structural inconsistencies in international decision making. The current structure seems to favor some states and to marginalize others who are not expected to contribute substantially to the expected outcome. In the climate negotiations, the ten major emitters comprise more than 60 percent (2008) of total global emissions (United Nations Statistics Division 2011). Therefore, negotiations tend to be substantially limited to a core of countries as this is increasingly seen as more effective than to have more than 190 countries at the table. But increasingly, countries outside this core group of major emitters see this as undermining the multilateral character of the international system. They argue that this power imbalance is reflected in the normative sanctions placed on developing countries when they make demands in climate change negotiations and is particularly reflected in the ways in which developing countries are portrayed in Western media. For instance, *The Australian* newspaper criticized the African countries for their behavior in turning COP15 into “a platform for demands that the world improve the continent’s standard of living.”

Reframing the North–South dichotomy as a more complex web of multilateral relationships means breaking away from a dualistic, dichotomous, “us-versus-them” frame and replacing it with a more complex and layered frame of relationships among parties with diverse and partly overlapping interests and relationships. This new understanding could facilitate a broader, more nuanced understanding of parties’ interests and perspectives. The majority of developing countries see their marginalization from

the decision-making process as unfair, while leading developing countries seek to constrain decision making to fewer countries for efficiency reasons.

The divergences between developed and developing countries became more apparent during the COP15 negotiations. For example, developed countries argue that, as the world's largest carbon emitter (with 23.33 percent of the total global annual carbon dioxide emissions in 2009), China should now shoulder more of the responsibilities for carbon reduction. China argues that this is an unfair and unrealistic expectation when one considers per capita emissions: China only emits six tons of carbon per person per year, while Germany emits more than nine tons per person, and the U.S. emits eighteen tons per person.

One way to promote reframing would be to educate negotiators in advance about the perspectives and interests of each country, with a "catalogue of interests" that describes how each country could be expected to perceive each specific issue. This catalogue could be produced by the UNFCCC secretariat or by a special United Nations representative for climate negotiations. (There is precedent for such a post: in 2003, the U.N.-appointed Ambassador Jaap Ramaker as Special Representative to Promote the Comprehensive Nuclear Test Ban Treaty Ratification Process. His main task was to promote negotiations leading to ratification of the treaty.)

Dealing with Asymmetry

Although United Nations-sponsored climate change talks are intended as an inclusive negotiation process, real-life negotiators frequently confront asymmetries in their bargaining power because of asymmetries in expertise, resources, and capacity. Where there are asymmetries in bargaining strength, stronger parties can be expected to have greater influence on the procedures and on the outcome, and coercion through economic, political, and military resources could become a factor in the negotiation.

But comparative weakness can also be a source of bargaining strength (Larson 2003), particularly in the climate change negotiations in which coalitions and alliances are established. A party with fewer resources and less capacity may possess "negative" power, namely the capacity to freeze, delay, or even veto others' objectives (Hardy 1985). A state without capacity to influence the issues may still dictate the speed of the negotiation.

In the climate change negotiations, negative power is particularly relevant because of the complexities of dealing with the distribution of burdens — moral complexities, as much as political, economic, and technical complexities. In this context, having the most means losing the most. When, for example, a developing nation like India argues that it is unwilling to sign the agreement because it cannot afford the cost of implementing mitigation technologies, this argument has a different moral weight than when the highly industrialized and much wealthier U.S. refuses to sign and ratify a global agreement. The U.S. objections may be legally legitimate, but

the rest of the world may perceive that the real reasons for the U.S. refusal — such as the strong and effective lobbying of American business groups — are less morally defensible. When strong states veto a global treaty, it will be perceived differently than when weaker, less wealthy states do so.

Thus, a state may also legitimize its positions by highlighting its deficits in resources and capacity — in the right context, its weakness becomes a source of power. Asymmetries in negotiation capacity, as Carlo Carraro and Alessandra Sgobbi (2008: 1490) have argued, lead to differing preferences regarding the negotiation setting. A weak player prefers to negotiate simultaneously, while a strong player bargains sequentially to signal her bargaining strength. Carraro and Sgobbi developed a computational model that simulates the process of negotiation to identify the main features of players' optimal strategies and equilibrium agreements. Under uncertain conditions, actors try to "discount," that is to calculate the present value of a specific anticipated future utility. This "discount rate" is then used to determine present decisions by simply finding the difference between the original value in the present and the value that something is expected to have in the future. In climate change negotiations, weaker players have a high discount rate, meaning that the negotiator needs to "spend" more or to accept more loss. The discount rate can help determine a bargainer's reservation value.

Asymmetry can therefore have mixed effects: it can both enhance bargaining capacity (stronger parties "have more to offer"), or it can create stumbling blocks as it can obstruct the bargaining process in general. A party with a better negotiation capacity may find it more beneficial to give up relatively more of its resources to the weaker party. Although the present value of the resources it gives up may be high, its relative strength may give it reason to anticipate greater yields in the future, which will ultimately surpass the cost of giving in. In this way, the (discounting) stronger party may improve its reservation value.

But asymmetry in negotiation capacity may obstruct the negotiation process when, for instance, the stronger party believes that it can unilaterally claim the value created at the expense of the weaker party. The weaker party will eventually use "defensive measures" such as negative power or "blaming and shaming." The bargaining table becomes a lose-lose situation.

Nevertheless, asymmetry will have fewer negative effects when the negotiating parties succeed in maintaining an integrative win-win dynamic. When parties become interdependent, one party's problem becomes everyone's problem.

Managing Outcome: Procedural Justice and Burden Sharing

The climate change negotiations have involved negotiating in both absolute and relative terms. They have focused primarily on the processes through which decisions will be made and how the burdens (costs) of mitigating and adapting to climate change will be distributed. Justice has also been a

topic of concern, including *procedural* justice (fairness in dispute resolution and resource-allocation processes, e.g., participation of least developed states in all parallel meetings), *distributive* justice (fairness in the distribution of rights and resources, e.g., emission rights due to development and in the distribution of the adaptation fund), and *retributive* justice (fairness in the rectification of wrong, e.g., compensation to vulnerable countries) (see Rawls 1971; Dworkin 1985; Bone 2003; Solum 2004).

Ideas about justice have been instrumentalized by negotiators as a source of bargaining power. For instance, in all simulation test groups, developing countries' argue that developing countries will be the most vulnerable to the effects of climate change and should thus be compensated by developed countries that have emitted more carbon and thus bear more of a responsibility for global warming. In one test group, the representative from Grenada even threatened to litigate to force developed countries to regulate their carbon emissions or to pay compensation to the most affected countries. But these different notions of justice sometimes compete in agenda formulation: which kind of justice is more important? Further, a focus on procedural justice can diminish the effectiveness of the potential outcome because a procedurally just and appropriate process is not always an effective one.

Flexibility at the Negotiation Table: Bilateralism versus Multilateralism

Bargaining in a multiparty setting requires taking a multilateral approach to negotiation. Results from the simulations I conducted suggest that having such a huge number of actors at the negotiation table is counterproductive to the negotiation process. The simulation games showed that multilateralism is not the approach preferred by major countries such as the U.S. Nevertheless, the framework of the United Nations is multilateral. Any decisions reached by smaller numbers of states will not be accepted by those left out of the decision-making process. Bilateralism can be perceived by less powerful players as an attempt to marginalize them and those parties lose their trust in the system. The complexity of the negotiation process must be addressed to prevent the process itself from becoming part of the problem.

At the recent COP meetings, major countries such as the U.S. preferred to negotiate bilaterally for reasons of efficiency. The slowness of the decision-making process is seen as proof that too many actors are talking at the same time. Arguments in favor of taking a bilateral approach to negotiate climate change issues do have some legitimacy. But when there is distrust, however, bilateralism is perceived as undermining the multilateral framework of the United Nations. Bilateralism should therefore be used merely as a method to prepare for the talks. No decisions should be made outside the multilateral framework.

Structuring the Process: The Role of Threshold States

Processes were structured to different degrees in the simulations. The participants observed that negotiations that involved a mediator or facilitator spared the participants from negotiating over the process and freed them up to concentrate on the substantive issues. In several test groups (Frankfurt; Cologne 2009 and 2012), the participants wished for a more institutionalized mediation. That raises the question: Who are the most appropriate mediators or facilitators? The climate change negotiations are not conducive to a hegemonic leadership because they can create costs for leaders that their countries are not willing to shoulder. A unique feature of climate change negotiations is that they involve burden-sharing in form of mitigation commitments. Leaders are then expected to take the largest portion of the pie, which is politically a toxic issue in domestic politics. What results is an international system without leadership in the climate change context.

In various test groups, representatives from individual countries other than the chair emerged as effective facilitators (although most did not see themselves as such) because they were members of multiple established coalitions. The results of these simulations suggest that representatives of so-called “threshold countries” such as South Korea, Singapore, and Malaysia — countries that share values, interests, and norms and that fall among both developed and developing countries — may actually be able to serve as credible mediators or facilitators. Their relative weakness may prevent other countries from seeing them as threats, while their memberships in multiple coalitions could reflect multiple interests that transcend the North-South divide. In almost all the test groups, participants representing threshold states formed the core of an invincible crosscutting coalition. Representatives from South Korea (IIASA 2009, Lviv), Mexico (IIASA 2010), Singapore (Group 2, De La Salle), and Hungary (Cologne 2012) have acted as facilitators without formally assuming this role.

In the IIASA (2009) and Lviv test groups, South Korea, although it belongs to the Organization for Economic Cooperation and Development, which is considered a marker of development, behaved in particular cases as a developing country. Because of their multiple coalition memberships, threshold countries share interests with both developed and developing countries, which may make them particularly good candidates for conducting “shuttle diplomacy” between coalitions.

Further Research

The propositions listed above are derived from the results of the simulations I conducted, and it is reasonable to assume that further refinement of these games would produce additional insights. For example, the role of NGOs in climate change negotiations could bear further scrutiny. What would the process look like if NGOs that represent constituencies that

states fail to represent for political reasons were involved? If NGOs could actually make proposals at the negotiation table, would it enhance the negotiation process or would it further impede the process? If NGOs would have the right to participate in ministerial conferences (with or without the right to talk), would the agreement be more comprehensive and sustainable? Is there a need to introduce an international code of conduct for both environmental and developmental NGOs?

Similarly important is an analysis of the role of the academic community in the climate change negotiation process. With the IPCC increasingly confronted by doubts about its credibility, the academic community needs to ask itself whether drawing clear lines between research and advocacy remains a fundamental research principle. Particularly because of the unprecedented power of scientific research in the climate change negotiations, researchers employ a self-constraining influence on decision makers. Policy makers want clear policy recommendations from scientists. The majority of the academic community, however, including the IPCC, follows the principle of “policy relevant but not policy-prescriptive,” which has created a gap between what policy makers expect and what researchers are willing to provide.

Finally, the simulation games showed the need to further examine transparency in climate governance-building through negotiations. Transparency in the decision-making process is demanded by both developed and developing countries. Transparency, however, can follow two different logics. Disclosing all necessary information may promote negotiation. By providing all information, decision makers can determine the real value of their decisions to the planet, which could eventually persuade them to say yes to an agreement — transparency can help rationalize decisions. Transparency also promotes accountability, which increases the public’s belief in the legitimacy of negotiators’ actions.

Simulations can contribute valuable knowledge. These simulations indicate what could happen, for example, when some of the real climate change’s most rigid rules are relaxed. Simulations help us think about the “what if” potential of making changes in negotiation processes. They suggest alternatives for getting past stalemate and creating value.

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Appendix One:

The Philippines' Information Sheet

Basic information

The Philippines ratified the Kyoto Protocol in 2003.

As part of ongoing efforts to address the threat of climate change by providing assistance to developing countries, the Korean Ministry of Knowledge Economy has signed two agreements with the Philippines. Korea will help the Philippines nurture experts and build a strong infrastructure for measures to address climate change. In addition, the two countries will actively exchange information on Clean Development Mechanism (CDM) projects. As the Philippines now has 27 projects endorsed and registered with the CDM Executive Board of the United Nations Framework Convention on Climate Change (UNFCCC), the country is likely to become one of the most attractive investment destinations for CDM projects. Considering the significant business interests of Korean companies in CDM markets, the two countries will undoubtedly uncover many more opportunities for cooperation.

The Philippines incessantly confronts the predicament of being prone to both natural and man-made disasters. Climate change intensifies the convergence of these different storms. Given that a majority of our people is mired in poverty, with livelihoods highly dependent on fragile natural resources, and living in settlements extremely vulnerable to climatic events, the Philippines finds itself in the eye of the perfect storm.

Sea-level rise leads to flooding especially in urban areas. PAGASA estimates that 1 meter rise by 2025 will flood over 5000 hectares and displace more than 2 million people around Manila Bay.

Roughly 20 percent of total power supply in the Philippines comes from hydroelectric sources. Changes in the patterns, volume, and geographic distribution of rainfall threaten to increase and perpetuate intensified reliance on imported coal and oil. As discussed earlier, rainfall is increasing over the Visayas and decreasing in Luzon and Mindanao. This trend points to implications on the hydropower generation of the country, since the country's major dams are located in Luzon and Mindanao. There are also health implications due to a warmer wetter environment. Prolonged periods of high temperature and water impounding due to sudden heavy downpours serve as ideal breeding conditions for disease vectors such as *Aedes* and *Anopheles* mosquito, dengue fever, and malaria.

Severe flooding in the extreme can totally rewrite the contours of the land. Water shortages due to drought, salt-water intrusion, or floods will influence decision making on investments in engineering and infrastructure. Political conflicts and civil unrest may intensify due to the impact of food and water constraints.

Positions

Acceptable binding commitment: 5% emission reduction with baseline 2005.

The Philippines pursue "editorial discipline" in all documents intended for all delegates. Countries like the Philippines do not have the capacity to have negotiators with the expertise to understand the context and the historical and technical background. In this regard, the Philippines wants to include in the draft resolution "editorial discipline" in regard to reports and documents circulated to everybody.

Furthermore, capacity building mechanisms should be enhanced through technology transfer which would be affordable (the best free) for all developing countries. The Philippines is perhaps prepared to make binding commitments if it will be able to collect necessary information through inventories regarding the scope of climate change in the country. The Philippines does not feel in a position to make commitments without knowing first to what extent climate change is really affecting the country.

Because of its exposure to natural hazards, the Philippines is one of the unsafest places on earth. Based on a new mortality risk index (MRI) released by the United Nations International Strategy for Disaster Reduction (UNISDR) on Monday, the Philippines ranks No. 12 among 200 countries and territories whose populations are most at risk from earthquakes, floods, tropical cyclones, and landslides. In this relation, the Philippines seek the improvement of infrastructures and enhancing natural disaster management. For this, the Philippines wants international assistance.

The country is not really in favor of the reform of the Clean Development Mechanism because it is one of the countries profiting from this scheme. The country sees that the negative implications of disaster risks are increasing, driven by poor urban governance, vulnerable rural livelihood, and ecosystems decline, leading to insecurities.

The Philippines believes that climate change should not be separated from discussions on social equity. Countries can mitigate the impact and prevent disasters by improving schools and hospitals. Infrastructures should be built based on risk assessment studies.

Due to the possible displacement of millions of people brought by climate change, an international mechanism should be established to enhance the capacity of developing countries.

Simulation
tips

The Philippines prefers bilaterally negotiating with developed countries such as the United States, Japan, and South Korea. In fact, the Philippines have existing capacity building projects with these countries.

As a member of the G77, the Philippines is a moderate force trying to bridge the extreme views in the coalition. However, the Philippines continues to criticize the West for failing to take the lead role.

The Philippines should criticize the West with its "failed economic model" in addressing climate change. The West should stop playing double morals. Food insecurity is partly caused by land conversion for biomasses (bioenergy).

The Philippines supports Australia in its effort of pushing the developed countries in assisting countries threatened by mass displacement.
