

3.1 Using M&S to Improve Human Decision Making and Achieve Effective Problem Solving in an International Environment

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Abstract. In the international arena, decision makers are often swayed away from fact-based analysis by their own individual cultural and political bias. Modeling and Simulation-based training can raise awareness of individual predisposition and improve the quality of decision making by focusing solely on fact vice perception. This improved decision making methodology will support the multi-national collaborative efforts of military and civilian leaders to solve challenges more effectively. The intent of this experimental research is to create a framework that allows decision makers to "come to the table" with the latest and most significant facts necessary to determine an appropriate solution for any given contingency.

Introduction

Imagine yourself sitting down in a meeting surrounded by individuals from many nations, none your own. Who do you gravitate toward? Who do you seek as an early ally? Why? These are some of the questions that we plan to address in our research. Modeling & Simulation (M&S) based training can create a realistic and relevant forum to explore our own predispositions and biases. Every individual has specific factors that influence their decisions and the multi-national collaborative environment often presents multiple factors that increase the likelihood of poor decision making. Our premise is that effective decisions are those based on facts, not perceptions. Our intent is to identify the role of individual partiality in decision making and clearly define the factors that dissuade each individual from the facts necessary to make an effective decision. Furthermore, we intend to present a framework that facilitates fact-based decision making in an international environment.

Fact-based decision making requires a focus on assessing the capabilities that each nation might contribute to solve the challenges facing the group. However, that capabilities assessment is often influenced by the language bias of the individuals conducting the assessment. According to research conducted by psychologists at

Harvard, the University of Virginia and the University of Washington, "A growing number of studies show a link between hidden biases and actual behavior. In other words, hidden biases can reveal themselves in action, especially when a person's efforts to control behavior consciously flags under stress, distraction, relaxation or competition." [1] For example, if you sit down in a group of people from all over the world and you appear to be the only one speaking English, you generally reduce the amount of input that you add to the conversation because it is uncomfortable to not be understood. Similarly, if you see there is one more English speaker, you will be inclined to converse with just that individual. This is where our bias lies. Most people affiliate with others who speak a common language. It makes sense. You want to communicate with those who can communicate in return. However, this bias often prevents the group from discovering the availability of the very capability that will contribute most to the challenge, leading to a poor, non-fact-based decision. Culture is another factor that influences individuals and contributes to the decisions made by collaborative teams in an international environment. A study conducted by a Swedish university used a M&S based methodology to investigate the various characteristics that influence decision making and found that cultural elements, such as a propensity to delegate

vice take charge in the face of an emergency situation, played a significant role in how teams from different nations interacted and how that influenced group decisions. "The disparity in ways to be diverse is likely to be the rule rather than the exception...Managers and leaders who assemble multinational teams should be prepared for this disparity in modes of cultural diversity" [2]. Unfortunately, the study did not attempt to measure the effectiveness of the decisions, but with some modifications to the M&S methodology, that determination could be made.

The aforementioned biases in language and culture have manifested themselves in the propensity for the United States to consistently partner with the United Kingdom, Canada, Australia and New Zealand in both civilian and military endeavors. The U.S. has closed computer networks to only work with these four nations and the U.S. moves through most conflicts in a strict partnership that is mutually beneficial with these nations. Although this relationship has been effective, it is possible that the U.S. may have had other foreign assets available for coalition operations with direct applicability to a given geographic region or for a specific conflict. It appears that the close alignment in language and culture between all five nations played a part in our collective history and the decisions made therein. That is not to say that with a capabilities assessment our leaders would not have made the same decision, but it does indicate a definitive partiality that facilitates interaction within the circle of five nations and creates barriers for entry with other nations.

In order to further examine the factors that influence our individual biases in a collaborative situation, we have to look at the individual elements of our personalities that impact a team setting. In addition to language and culture, the larger set of biasing factors includes politics, financial status, physical appearance, personal mannerisms, marital status, age and race.

In general, one factor alone will not lead an individual away from fact-based decision making, but with multiple factors in play; it is likely we will see a breakdown in effective problem solving. We stray from the facts and rely on what we see or "know" from our upbringing and/or life experiences.

Even though we can identify the individual factors that contribute to bias or predisposition, the international arena creates additional factors for consideration. It forces each individual to look at differences in culture and factor them into a decision. However, factoring in culture does not necessarily make the solution set easier, in fact, it complicates it to the point where the requisite facts are harder to identify and quantify. For example, imagine yourself as one of five commercial manufacturing plant leaders in the world. There are representatives from four other countries and two translators in the room. Although there are clear and concrete facts that need to factor into your decision to move a portion of your plant to these nations, you are strangely distracted by the dialect of one participant and the professional attire of another. It could be assessed to be a lack of focus due to these unique differences between yourself and the other participants, but more significantly, it may be tied to the same elements of your own predisposition. If you knew that you would be distracted coming in the door, then you could have quickly addressed the valid points for your argument to include the manufacturing plant specifics of available labor force, price per square foot, environmental constraints, etc.

So, the question then becomes how do we get back to the facts...and push all of this other information out of our minds. By modeling this type of situation with various players in dynamic environments, individuals will quickly realize the factors that most affect their decision making. The next step is to eliminate this partiality and get back to the facts.

Discussion

Before discussing an approach to getting back to fact-based decision making, it is important to bring up two other elements that complicate collaborative efforts in an international environment - particularly those conducted during military operations. Those elements are time and stress. During most military contingency operations, it can be extremely challenging to get all of the facts before a decision needs to be made. For example, if a natural disaster has left hundreds of people helpless and stranded, the need to act far outweighs the time required to obtain all of the facts. Similarly, if we look to our military, we can identify numerous situations where lives are at stake and a rapid decision needs to be made. In that regard, we need to use M&S to help each leader to define his, or her, own elements of predisposition and find a way to acquire facts in an expeditious manner. Military leaders often face life or death consequences based on their decisions; the stress of rapid response must also be addressed in order to prevent it from enhancing our natural biases that run counter to our desire for fact-based decisions.

Research conducted by the University of Pennsylvania concludes that the need for human behavior models is nowhere more apparent than in the military modeling and simulation community ...to satisfy a wide and expanding range of scenario concerns. Their interest goes beyond mission-oriented military behaviors, to also include simulations of the effects that an array of alternative diplomatic, intelligence, military, and economic (DIME) actions might have upon the political, military, economic, social, informational (psyops), and infrastructure (PMESII) dimensions of a foreign region" [3]. Only by expanding the current research conducted to date on DIME and PMESII and creating an M&S environment reflective of multinational collaborative teams will we be able to accurately assess an international environment and arm our decision makers

with the fact-based information they need to make sound decisions.

"Operations Iraqi Freedom and Enduring Freedom have demonstrated the need for rapid change in tactics, techniques, and procedures and our overall approach to campaigning. They have proven that the more complex the contemporary operational environment, the more the body of professional military knowledge must remain in a state of purposeful instability [4]." With this purposeful instability comes the need for a reduction in bias and an open mind for all possible options. An international environment adds to the overall complexity of any given campaign and forces an understanding above and beyond decision making in a single nation setting. With that being said, we can recreate actual environments from specific military conflicts using M&S to better prepare our military leaders. We can take direct examples from military leaders who made what they believed to be the best decision at the time and analyze it through interactive training.

The M&S environment could fall into a "gaming" category where different role players represent different nations and each nation's intent in the scenario; or the M&S solution could be as simple as a single role for the participant and all other players are programmed as they were during that day in history. We can evaluate the decision of the M&S trained individual and compare it to the decision of the actual military leader during the historic event. This comparison will not only force leaders to learn from historic lessons, but also grow awareness for the pitfalls of DIME and PMESII.

This same concept can apply to the civilian sector. If we take the actual experiences of civilian business leaders and recreate each scenario in an M&S world - civilian business leaders can train in this world. Not only will they have the ability to evaluate themselves, but also reflect on the decision made by the business leader with the same information presented. This will help them to identify the information that is truly needed, that which causes distraction

and the combination of the above that works for each civilian leader to truly make a fact-based decision.

Conclusion

In summary, M&S based training is a viable mechanism for decision makers in both the civilian and military sectors to overcome their biases and become better at focusing on relevant facts. In order for our leaders and decision makers to quickly capture a partner nation and/or organization's capacity and capability, we need to incorporate known predisposition and requisite capabilities assessment with M&S scenarios. We believe this includes capabilities assessment injected directly into the current decision making portion of any given process. In order to remain as inclusive as possible for a broad spectrum of challenges, we plan to include international organizations (IO), regional governmental organizations (GO) and non-governmental organizations (NGO) in our study as there is a tremendous difference in the military versus civilian mindset and model therein despite the fact that the capabilities of each enhance the effectiveness of the other. We understand that it is impossible to obliterate a bias, but it is possible, from an academic and M&S standpoint, to objectionably assess a situation, look at all of the pertinent factors and facilitate an effective decision to align with the highest value assets in an international environment.

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