Field-testing a Comprehensive Approach simulation model

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ABSTRACT

This paper describes the field tests of a simulation based game aiming at raising awareness and creating a deeper understanding of the dynamics of the comprehensive approach (CA). The setting of this game is that of a failed state where an UN intervention takes place after massive conflict that requires a CA to stabilize the situation. That is, the civil and military actors need to collaborate effectively, taking into account their respective strengths, mandates and roles. Underlying the game is the Go4it CA simulation Model (GCAM2.0).

GCAM2.0 was extensively field-tested in eight sessions with about 16 persons each, aiming at assessment of the perceived realism and learning effects. It was found to provide a sufficiently authentic experience to obtain awareness of the CA in novices. With regard to improving the deeper understanding of the dynamics and complexity of the CA, in a cooperation-oriented setting only deeper learning can be reached.

Keywords

Comprehensive Approach, Serious Gaming, Simulation, Humanitarian Crisis

INTRODUCTION

The essence of the Comprehensive Approach (CA) is to create "synergy amongst all actors and actions of the International Community through the coordination and de-confliction of its political, development and security capabilities to face today's Challenges including Complex Emergencies[1]", see also de Coning and Friis (2011). Knowing which organization can assist you in what way is key to successfully applying this approach. The comprehensive approach is a mindset and must be trained as such. Training CA awareness is the goal of GO4IT (van der Hulst et al., 2012), a serious game developed by a consortium of NLR, T-Xchange and TNO as a result of winning the Netherlands Innovation Game of 2009.

The setting of Go4it is a UN intervention in a failed state after massive conflict that requires a CA to stabilize the situation and to reconstruct the failed state. That is, the civil and military actors need to find the optimal position in the civil-military interaction spectrum -taking into account their respective strengths, mandates and roles- in order to push forward the effectiveness of their interdependent dealing with a post-conflict setting. The simulation is implemented for a setting with four roles (Task Force (TF), Local Government (LG), Opposing Forces (OpFor) and Non-Governmental Organizations (NGOs)), while each of the roles is played by a syndicate of two or three players. Underlying the game is the so called Go4it CA Model (GCAM) that models the effects of player actions.

The game was developed under supervision of and with extensive support from the Comprehensive Approach

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[1] Definition resulting from the NATO internal CA Stakeholder Meeting 22/23 September 2010.

Tiger team of the NATO Civil-Military Cooperation (CIMIC) Centre of Excellence (CCoE). GCAM has been initially validated over a period of three months in five separate test sessions with people from the NATO CCoE, TNO, The Netherlands Ministry of Foreign Affairs and several NGOs. Since 2010, Go4it is embedded in CIMIC training courses of the CCoE and of the Dutch Civil Military Interaction Command (1CMIco). TNO has continued the development of the GCAM model after the delivery of the game.

With the resulting GCAM2.0 model, several comprehensive field tests have been performed to assess 1) the realism of the model, 2) whether the game adds to an awareness of the comprehensive approach and 3) whether deeper learning about the relation between interventions and effects can be achieved in a more experienced population. In this paper we will report about the outcomes of those field tests.

Figure 1: Trial session

Figure 1 shows (from left to right) the three phases of Comprehensive Approach strategic decision making; analysis and planning, strategic interventions and negotiation and finally, reflection.

The Comprehensive Approach simulation model GCAM2.0

Interventions

Underlying the game is the so called Go4it CA Model (GCAM). GCAM2.0 presently includes about 240 different 'interventions' that can be applied to provide emergency aid to displaced people, work on the basic living conditions of the overall population, improve healthcare, education, the economy and agriculture in particular and rebuild the local administration. As GCAM2.0 is basically non-kinetic, it includes mainly political, economic and civil instruments. Only a very limited set of interventions directed at safety are available for coalition forces, such as establishing buffer- and demilitarized zones around Internally DisPlaced (IDP)- and refugee camps. Development activities, for instance, address the reconstruction of health care, education, agriculture, the security apparatus and the economy. It also addresses capacity building, such as 'Developing a program for the education of civil administration' or 'Providing a program for police training and mentoring'. Finally, it enables political actions such as 'Pressuring the president to replace the local governor'.

Opposing Forces (OPFOR) have interventions that may destruct, may derail capacity building and/or corrupt parties involved. However, OPFOR can also decide to be constructive, e.g. to win the hearts and minds of a specific tribe.

Each intervention has certain costs, hence syndicates will have to balance their use of their interventions given their limited resources available. The interventions have primary and secondary effects on the lines of development (education, safety and security, economic development, rule of law, etc.) in the conflict area. Effects can be direct or delayed in time and they can affect the intended parameters directly or indirectly. The interventions can also affect parameters with regard to the political support for the parties and the hearts and minds of the local population. The parameters are elaborated upon below.

Most of the lines of development demand for cooperation between the actors. Generally, acting in isolation will be counter-productive. Players, therefore, need to cooperate and negotiate to gain support for their interventions. In this process, the syndicates learn whom to approach for assistance and whom not. For example, the functioning of a NGO is greatly enhanced by coalition forces assuring safety in a refugee camp. But, simultaneously, most NGOs may not want to be directly associated with military forces so that they can maintain their neutrality. These conflicting interests are captured in the simulation.

Targets

Each syndicate is provided with a number of targets, i.e. end states to be reached. Examples are targets aiming at establishing a functioning public healthcare or securing the camps in the focal area (Local Government target) and overthrowing government (OPFOR target). Such targets can be reached by applying interventions, the so called 'instruments of power'.

Assessments

GCAM2.0 provides about 60 assessments that allow for requesting intelligence about reconstruction areas. Each assessment, however, costs resources as people need to be send out in the field to gather the intelligence. Hence, the amount of intelligence one may gather is not unlimited and expenditure for intelligence makes that less resources are available for interventions. However, the intelligence will help to make a better selection of the interventions to be applied.

Effect Parameters

The GCAM2.0 model incorporates three kinds of parameters that represent the effects on the state of the conflict area: reconstruction areas (left), hearts and minds (middle) and political support (right), as depicted in Figure 2. Each intervention that is played affects those parameters and most intervention have textual effects as well (below).
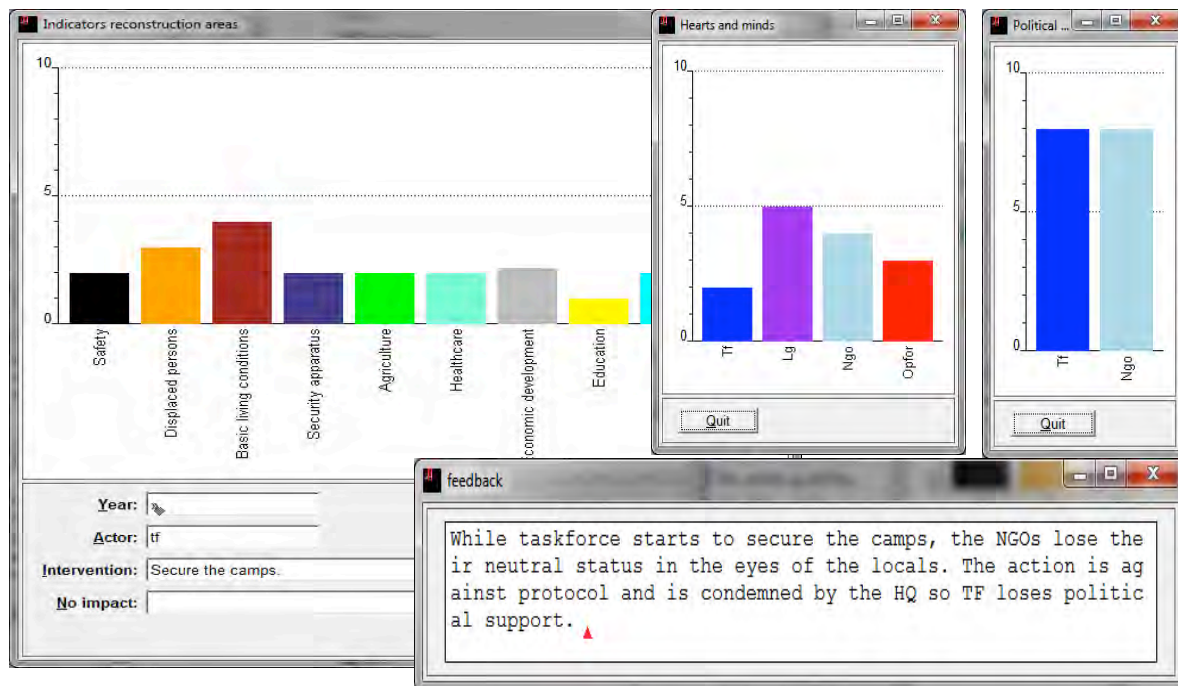

Figure 2: Output of GCAM

- Displaced persons, the state of IDP and refugee camps in terms of , shelter, access to food, safe water, sanitation, health care aiming at prevention of outbreaks of infectious diseases.
- Basic living conditions (BLC); the state of living conditions of the population in the focal area (outside of the camps) in terms of access to food, safe water, sanitation and power. Together with security and safety, BLC are critical preconditions to social development and economic growth.
- Agriculture, the state of agriculture in terms of food production for the focal area and as a means of living for the local population. Investments in agriculture aim at food relief and famine prevention, proper food production to supply local population, as well as providing economically viable and longer-term sustainable livelihoods by agriculture. A final aspect is the discouragement of the production and sale of illegal crops.

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- Healthcare; the state of healthcare in terms of infrastructure (clinics, hospitals), availability of schooled personnel, medical supplies and apparatus, salaries being paid.
- (Civil) Security Apparatus; the state of capacity building of civil police and security forces.
- Governance; the extent to which administration infrastructure is in place and government officials are functioning properly and government is accepted by the population.
- Rule of Law; the extent to which a legal framework, justice infrastructure and institutions are in place and functioning. Key elements are census, registration of land, human rights guaranteed and reconciliation at work.
- Education; the state of schooling in terms of infrastructure (schools), availability of schooled teachers, materials, salaries being paid, participation of parents.
- Economic development; the state of economic development in terms of production, transport and trade.

The model also implements two parameters for political support for the NGO's and for the Task forces; i.e. the attitude of their (potential) donors towards their activities in the conflict area. When political support gets below a critical limit, their impact decreases substantially. The model finally implements four parameters for support from the local population, the so called 'Hearts and Minds' parameters. That is, the support each syndicate receives from the local population. Loss of support from the local population and the local government results in a decrease of impact.

Model assumptions on the process of reconstruction

The CA model assumes an overall reconstruction of a failed or fragile state after conflict according to the shape-clear-hold-build and transfer phasing (see Cordesman, 2010).

- Shape During the planning phase one may do assessments to gain detailed information about the state of the conflict area (the focal area).
- Clear In the clear phase, the primary focus needs to be on enhancing security and to provide emergency aid to the displaced persons and to the populations of the focal area whose basic living conditions have deteriorated due to conflict. In this phase, attempts of NGOs to provide emergency aid are hampered severely by the danger to local NGO personnel, lack of means of safe transportation, looting and corruption due to overall chaos. Only after the taskforce has established buffer- and demilitarized zones around IDP and refugee camps, the NGOs will be able to provide emergency aid. During the process of establishing buffer zones, Provincial Reconstruction Teams (PRTs) will be main providers of emergency aid to the population.
- Hold In the hold phase, interventions aiming at security and at improving the living conditions of displaced persons and local population must still be predominant, but planning should be done for the reconstruction of healthcare, education, agriculture, governance, the security apparatus and economic development should be initiated. Opposing Forces may still try to initiate new conflict but the impact of such attempts decreases. NGOs will have to level and cooperate with the Task Force to be able to be effective, as aid and reconstruction can be done safely only in areas controlled by the Task Force.
- Build To go over to the build phase, Safety will need to be at an acceptable level. From then on, reconstruction on all areas should be in full gear. During the build phase, more and more of the reconstruction should be responsibility of NGOs and the local government. When the security apparatus is in place, the opposing forces will be less effective in destabilizing.
- Transfer Finally, during the transfer phase, all reconstruction needs to be under the responsibility of the local government. Civil-Military Cooperation (CIMIC) and/or PRT may still advise, but reconstruction activity by e.g. PRT will show to be counterproductive.

Scenario

Go4it starts out with a presentation of the conflict scenario. The country of Xona is introduced, where tensions between the legitimate government and the Nago group are the source of an ongoing violent conflict. The resulting humanitarian crisis involves violence, starvation and diseases. Camps are overburdened with displaced persons and child soldiers are being recruited by the Nago forces.

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At the start of the actual simulation, the Xona government calls for an UN intervention thus involving a coalition taskforce in the situation.

This scenario is accompanied with some background information about the scale of the conflict. However, it purposefully withholds essential information as one important mechanic is the act of using *assessments* to gain information. It is up to the player to identify blind spots in their awareness relative to the goals they want to pursue. The fact that players need to dig deeper for relevant information is also an instrument to encourage active participation of the players. This way of having learners make sense of deliberately ambiguous situations is a better way of teaching according to Yamori (2008).

Playing the game

Playing the game consists of three phases: 1) Analysis and planning, 2) Playing several rounds and 3) Reflection. The purpose of the planning phase is twofold: planning is a natural part of a strategic process and it motivates the player to hypothesize about the CA mechanisms. We deliberately limit the planning phase in time since we put emphasis on the post-narration of decisions rather than on extensive pre-analysis for better decision making (Yamori, 2008). We aim at providing a safe environment to experiment, enabling this emphasis on learning by experience, rather than perfect planning.

During the Playing phase, the syndicates try to execute their CA strategies. Each round (of about 15 minutes) stands for half a year during which they can play assessments, interventions or support interventions of other syndicates up to the limit of available money. The possibility to support interventions of other syndicates creates a dynamic of cooperation and negotiation which contributes to two learning goals: First, to act effectively, one needs to appreciate each other's qualities and strengths. Second, to find and pursue shared interests, one needs to liaise. At the end of each round the syndicates receive a briefing explaining the effects of their interventions.

Then, in the reflection phase, the players look back on their initial strategy, the assessments and interventions made and the resulting outcomes. Lastly, the game leader addresses how the experiences of the players relate to the key learning goals of the game. Given a constructivist approach to learning with games, reflection is an essential part of the learning process (van der Hulst et al., 2008). In this phase players relate their experiences to general concepts, allowing them to relate the lessons learned in the game to their professional behavior.

Development and initial validation

GCAM is based on several CA models and models of stabilization operations (see e.g. Smith, 2004, Oosterhout, et al., 2009, Heesmans, 2009), combined with many of the lessons learned from the Dutch operational analysts (Toevank and Gouweleeuw, 2004, Smeenk , Gouweleeuw and van der Have, 2007, Heesmans, 2008) and from the NATO CIMIC Centre of Excellence. These lessons learned are modeled in GCAM2.0 through a large set of interventions which incorporate unexpected side-effects, characteristic for the operational complexity.

For example, the player may consider distributing fertilizer to farmers in order to improve the reconstruction area of agriculture. In this case, players will find out that the number of roadside bombs has increased exponentially. As the player finds out, fertilizer is a potent ingredient for making IED's and without proper instruction to farmers, they are unable to use fertilizer effectively. The above example illustrates how players experience the consequences of their interventions. After the game, they can reflect on them, and draw their conclusions. This way, GCAM2.0 facilitates learning by experience and avoids plainly reciting lessons as they are written.

Initial balancing and testing

GCAM 1.0 has initially been validated over a period of three months in five separate test sessions with people from the NATO CIMIC Centre of Excellence, TNO, Foreign Affairs, several NGOs and the Dutch 1 Civil Military Interaction Command.

The GCAM model has been fine-tuned to create a insightful and engaging game experience. For example, effects of interventions are limited such that, a syndicate will have a hard time reaching their goals in an isolated manner. However, effects of interventions have to be big enough to emphasize a relationship to the intervention played. This balance has been constantly refined during testing.

After the trial phase, the Go4it card game is now fully embedded in NATO-CIMIC curricula and in the Dutch 1

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Civil Military Interaction Command Courses. The CCoE has educated eight game leaders and the 1 Civil Military Interaction Command educated seven game leaders to support game sessions.

TNO continued the CA model development after the delivery of the game and produced GCAM2.0. Many revisions have been made upon the model as well as the game mechanics. Besides cooperation and negotiation as targeted by the initial Go4it card game , the GCAM2.0 simulation explicitly targets analysis and strategic planning and thus complex decision making in the CA domain.

FIELD TESTS

Methodology

The aim of the field tests was to assess:

1) **Realism of the model**: whether the GCAM model was sufficiently realistic to attain the learning goals;

2) **Acquiring awareness of the CA**: whether GCAM contributes to an increased awareness of the comprehensive approach in novices;

3) **Improving the understanding of the dynamics and complexity of the CA**: whether GCAM contributes to an improvement of understanding of the dynamics of Comprehensive Approach in more experienced populations.

We conducted field-tests with both novice and fairly experienced populations.

- **Novices**   The novices were 1) two groups of students from a master track on gaming, 2) trainees from the Dutch ministry of Infrastructure and Environment that consisted of young individuals less than 30 years of age and 3) a team of colleagues (researchers) not involved in the comprehensive approach (see Figure 3.). All three trials were two hours only. All groups had about equal percentages male/female.
- **Experienced populations**   The trial populations with a background in military and humanitarian action were personnel from 1) NGO's, 2) diplomats from the Dutch Ministry of foreign affairs, 3) international students in a master track foreign affairs (all groups of about equal percentages male/female), and 4) colleagues involved in research upon the comprehensive approach (100% male) and finally 5) two military groups in an elite commander staff training course in the Royal Netherlands Army (95% male). The two latter military groups had already been through a curriculum of Comprehensive Approach training and as such were already familiar with the concept.

Figure 3: Left strategic planning, right negotiating

Each trial demanded 12-20 persons in total. Certainly for the more experienced groups this made it impossible to fully control the setting. Trials could only be done on basis of availability and within the restrictions of local organizers. Hence, we weren't able to fully control the amount of time available for each session, the exact number of participants and the physical setting. For instance, where GCAM2.0 has been developed for use in a four hour session, all groups of novices had only two hours available.

As all trial groups participated with the intention to learn about the Comprehensive Approach, we could not use test methods that interfered with the learning process, hence we used observation by the game leaders as a main instrument for analysis.

- **Realism** With regard to the realism of the GCAM2.0 model (question 1) we observed the execution and reflection phases to record with which frequency the participants challenged the outcomes of the GCAM2.0 model- and which combinations of interventions and associated effects were challenged. This analysis was done with the experiences groups only, as those groups have sufficient CA background to provide valid comments on the model.

- **Awareness and understanding** For both the second and third test goals (question 2 and 3), we observed during both analysis- planning phase and execution phase and afterwards during the reflection. During those phase we analyzed discussions amongst players to see to what extend their conclusions were valid. After the game session, we specifically asked each syndicate to report on what they had learned. Awareness was assessed with novices, understanding with the experienced groups.

The field tests reported in this paper do not represent a scientific validation, they were primarily an exploratory study to investigate the broader effects the simulation had in terms of emergent behavior and resulting learning, aiming at improvement of the model. In consequence, during the course of the field tests, we improved the model when necessary. Hence, when an obvious bug or improbable effect was found in the model, it was repaired before the next field trial.

Results

Realism

The first question was that of the 'Realism of the model'; i.e. is the GCAM model sufficiently realistic to attain the learning goals. This analysis was done with the experienced groups.

All experienced groups at some stage commented that they experienced effects that wouldn't be very realistic. In several of the cases indeed we agreed and subsequently we repaired those effects before the next field trials.

All groups challenged the outcomes, however, the two military groups challenged the model far more frequently. They frequently objected to effects they said were not realistic. A fair share of the reactions were out of pure frustration, as the military were so eager to win (see below), they again and again challenged the model when the outcomes weren't as planned. GCAM2.0 is, however, designed to purposely confront users with the unexpected outcomes of their actions to make them aware of the fact that all their interventions will have (sometimes negative) side effects or sometimes even totally counterproductive effects.

The civil groups challenged the GCAM2.0 model less, we noticed that they readily accepted unexpected effects to their interventions, frequently stating that 'such things actually do happen'. In questioning after the reflection, all experienced groups, except for the military group, indicated that the model was sufficiently realistic, although they sometimes expected more detail.

All in all, after eight field trials and repairs of all effects evidently unrealistic, we estimate that basically at least 90% of the effects are now sufficiently realistic. After the field trials, we again hosted nine sessions with civil and military groups and observed whether the CA experience was sufficiently authentic to keep participants from rejecting the abstraction of reality and keep them engaged in the game. In those sessions, We obtained very few indication of a necessity to adjust the model any further.

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Acquiring awareness of the CA

Acquisition of Awareness was assessed within the novice populations. The two groups of students experienced no difficulty at all. They just 'jumped in' and easily got into their role. With them we saw a mixture of competitiveness and meaningful role playing. The students saw it primarily as a fun experience and there was a fair bit of shouting, yelling, cheating and challenging the model. There was work on syndicate identity, some of the syndicates e.g. came up with a syndicate yell like 'GO REBELS'. Still, after the reflection they expressed that they had acquired a reasonable awareness of what goes on in a humanitarian crisis.

The third group(trainees from the Dutch ministry of Infrastructure and Environment) eagerly started planning their first moves in an extensively analytical fashion. This led to the trainees initially being disappointed by the abstractions that GCAM makes in simulating the state of the conflict area, as their planning had assumed cross-boundary geo-politics. However, as soon as they started negotiating for support on interventions, they were captured by this socially engaging dynamic. Furthermore, typical interventions such as the Taskforce securing NGO camps and alternative schooling led to trainees openly declaring that the simulation had increased their awareness of the complex dynamics of a CA setting.

The fourth group (researchers) experienced some difficulty in understanding the setting and expressed some resistance as 'they had so many possible interventions that they couldn't oversee the implications' and 'really did not understand the way the game worked'. After this initial resistance, the simulation developed into a meaningful exercise. The dynamics were, however, limited as Local Government and Opposing Forces did not readily develop double agenda's. This might have developed if we would have had more time for the excercise. The third group was not really interested whether they had reached the targets for their role. The full group did express, however, that the game indeed made them aware of the dynamics of the comprehensive approach.

Improving the understanding of the dynamics and complexity of the CA

The question whether GCAM could add to a further understanding of the dynamics and complexity of the Comprehensive Approach with experienced target groups was answered by observing and questioning the experienced groups.

For the two military groups, the GCAM 2.0 simulation did not have the desired learning effects. The military from the commander staff curriculum were very eager to experience and learn, but reported in the final evaluation that the experience for them never really got beyond playing a game and that it did not provide the rich experience they expected from a simulation exercise.

In this military group, we observed a very straight forward goal oriented approach; from the beginning on, the military headed directly towards their targets. For example, we overheard statements such as, 'ok, our goals are that we will need to rebuild health care, lets just initiate those interventions that directly add to healthcare'. So they did, rather than trying to convince the proper parties such as NGOs and local government to invest (more) in health care. Other indications of the target oriented approach were that they repeatedly asked whether their targets were reached already. In addition, the military commented fiercely on unexpected effects of their interventions when these turned out to be detrimental to reaching their targets.

At 2/3d of the time available, they started being very competitive and primarily tried 'to win the game' mainly by 'hacking into and beating the underlying model' instead of experiencing the flow of affairs in a comprehensive approach operation. The military explained to us that the course they were in explicitly trained them to be eager and competitive as in combat the will to win can be life saving. All in all, the military kept seeing the simulation as a game-that-should-be-won and reported that they did not really see it as a truly valuable experience from a learning perspective.

In contrast, the other four groups considered the simulation exercise as a rich experience, adding to an understanding of the dynamics of acting in a multi actor setting combining military intervention, stabilization and peace keeping during a humanitarian crisis. All four groups also reported that they thoroughly enjoyed the experience. The NGO personnel enrolled only in a one hour session, but we observed similar outcomes.

Students, colleagues, NGO personnel and the diplomats tended to immerse themselves in the experience and to 'live their roles'. For example, after the initial orientation phase, the Local Government and the Opposing Forces syndicates started developing double or triple agenda's. This led them to initially generally 'playing nice' and being cooperative for a while, to suddenly turning corrupt or plainly hostile.

All groups fiercely negotiated and showed a fair amount of elation while doing so. As could be expected, the diplomats directly aimed at finding common ground and found it in parallel interests – even amongst opposing forces. But also the other three groups understood that the main mission here was not to act in splendid isolation

but to find common ground. The NGO personnel expressed great enthusiasm in acting in roles other than their own, and now being a pain in the ass or being totally corrupt.   We also observed that all civil groups were not aiming for a straight forward approach of the targets, yet tried to build an understanding and sometimes affect with the other parties involved.

The first three groups were far less goal oriented compared to the military groups. In the reflections, the diplomats and NGO personnel weren't at all interested in whether they had 'won the game'.. The students were interested, but to a moderate extent.

Conclusions

- **Realism** Experienced participants have indicated that some effects of the GCAM model are not realistic according to their field experience. GCAM has since been modified to represent more realistic effects. It also has been extended to address more nuance in the effects. The nine trials that have been done after the field tests have confirmed that GCAM presently offers a sufficiently authentic experience to keep participants from rejecting the abstraction of reality and keep them engaged in the game.

- **Acquiring awareness of the CA** All novice groups declared that they had gained awareness of the complexity of a Comprehensive Approach after using GCAM. It was also observed that these groups were immersed by the game dynamics, actively engaging in planning, liasing and negotiating. The intrinsic motivation to experiment with the effects of GCAM seems to provide the students with awareness of the CA.

- **Improving the understanding of the dynamics and complexity of the CA**   Here the results were to a certain extent inconclusive. Where the military experienced groups reported that they did not have a valuable learning experience, in contrast, the experienced civilian parties did confirm a meaningful experience. The two groups were distinct in their level of competiveness and focus on the overall goals. Perhaps the greater focus on goals of the military group meant they were playing GCAM2.0 as a competitive game rather than as an explorative one. As such, they were not focused on learning but rather on winning the game. GCAM2 aims at creating awareness of the complexity of a CA approach and creating a mind-set for cooperation. The participants of this course were already beyond this level of training. One hypothesis is that as GCAM2 lacked new learning material, it was natural for the participants to seek alternative challenges, such as beating the game.

All in all, the results indicate that GCAM2.0 is likely to provide a sufficiently authentic experience to create awareness in novices. It also may have beneficial effects with regard to acquiring a deeper understanding of the dynamics and complexity of the CA domain, that is, if the setting is deliberately created so that trainees are willing to engage in the experience rather than be competitive and primarily strive to win.

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