

Analytic Support to a Civilian Headquarters: The Cornwallis Approach

David F. Davis

Professor and Director
Peace Operations Policy Program
George Mason University
Arlington, Virginia, U.S.A.
e-mail:ddavis@gmu.edu

Joining the US Army Corps of Engineers in 1972, Davis held increasingly responsible positions in the Corps and as an Operations Research Analyst. His assignments included Command of a Combat Engineering Company along the Inter German Border, Assistant Professor of Mathematics at the United States Military Academy at West Point, a Senior Analyst at the US Army's Training and Doctrine Command's System's Analysis Activity at White Sands Missile Range, and as Chief of the Modeling, Analysis and Simulation activity for the US Army's Engineer School at Ft. Leonard Wood. Upon his retirement from the Army, Davis established the Peace Operations Policy Program in 1994 and created the initial version of the Conceptual Model of Peace Operations the following year. The masters degree curriculum was devised in 1996 and accepted by GMU as a formal degree program in 1997. Davis co-developed a Facilitated Problem Solving workshop, designed to bring diverse groups together to solve problems in participatory and consensus-building environment, which was used in Liberia, Sierra Leone and Bosnia. He has served as facilitator and adjunct faculty for the US-German Marshall Center's Crisis Management Seminar Series given throughout Eastern Europe, the Baltic States and Central Asia, and as a professional adjunct to the Institute for Defense Analyses. His application of mathematical modeling and operations research techniques to conflict analysis and resolution focuses on the ability to represent various processes in peace operations. This work has gained data from field trips throughout West and Central Africa, Central America, Central Asia and Eastern Europe. He conducted a summer's research, 2003, on the historical archives of SFOR and KFOR. During the Spring and Summer of 2004 he was on sabbatical from GMU working in the Coalition Provisional Authority, and later US Embassy, Baghdad. In Baghdad he was the lead risk and conflict analyst for the Office of Policy Planning and Analysis and later the lead strategic planner for the Iraq Reconstruction Management Office in the US Embassy. He continues working on several simulation and modeling activities, researching and composing archetypes of military units involved in a post-combat stabilization environment. Professor Davis is the Founding Chair of the Cornwallis Group.

INTRODUCTION

This paper will describe an analysis that was conducted by the Office of Policy Planning and Analysis (OPP&A) of the Coalition Provisional Authority (CPA) during the early Spring of 2004. This analysis was conducted for a civilian headquarters, the CPA. However, it was conducted in a joint and combined environment.

In late 1994 a group of international military analysts was formed to look at analytic approaches to the study of future conflicts. They met at the, then new, Lester B. Pearson Canadian International Peacekeeping Training Centre at the former Canadian Forces Base – Cornwallis. The group took the name of the location of its first meeting and became the Cornwallis Group¹. The purpose of the Cornwallis Group has evolved over time and can now be said to include the fostering of interagency approaches to analysis primarily in Peace Operations or Operations Other Than War. However, a significant element of the Group includes all civilian-military operations, not just those of Peace Operations or of OOTW.

The primary premise of the Group is that Operational Analysis as conducted by military analysts has not had a parallel genre in civilian institutions. Therefore analysts and operators from civilian institutions are invited to participate at the Group's annual meetings and to submit papers for the annual publication. The hope is that by working together and sharing analysis the effectiveness of the multi-national, inter-agency operations will be increased. The work discussed here is a direct result of the Cornwallis Group. The author was hired into the OPP&A based on a shared understanding with the director of the office, who has been a member of the Cornwallis Group since its early days.

THE OFFICE OF POLICY PLANNING AND ANALYSIS

Figure 1 represents the organization of the Coalition Provisional Authority (CPA) in February 2004. As depicted, the Director had two major subordinates: the Chief Operating Officer (COO) and the Chief Policy Officer (CPO). He was also advised by a Secretariat and by two special offices; the General Counsel and the Office of Policy Planning and Analysis.

OPP&A was started in April 2003 and grew over time to where by the beginning of 2004 it was staffed by up to ten professionals. OPP&A consisted of a Director, a Military Assistant, Risk and Conflict Analyst, Sector Analysts, a Statistician and a data base administrator for the Strategic Plan. The Sector Analysts were assigned particular sectors of the Strategic Plan to coordinate updates and activities within these sectors. The Strategic Plan is discussed in more detail below.

The functions of OPP&A were to provide policy level advice to the Executive Board (Administrator, COO, CPO), to administer the Strategic Plan, and to provide traditional staff assistance (special projects, coordination, oversight) to the Executive Board when required.

THE STRATEGIC PLAN

The primary tool of OPP&A was the Strategic Plan, illustrated in Figure 2. This was a computer-resident document that described the goals and agenda of the CPA. The plan was modeled on the initial work done under JTF-4 and ORHA and expanded by the CPA. The sectors of the plan included Security, Essential Services, Governance, Economy and Strategic

¹ The Canadian Forces Base – Cornwallis is located at Clementsport, Nova Scotia, Canada. The base was named after Edward Cornwallis (1713-1776), the 'Founder of Halifax' and Governor of Nova Scotia in the mid 1700s.

Communications. Each Sector was developed with Objectives, Objectives were composed of Key Tasks and Key Tasks were to be accomplished by a series of Sub-Tasks that were monitored week to week and changed every calendar quarter.

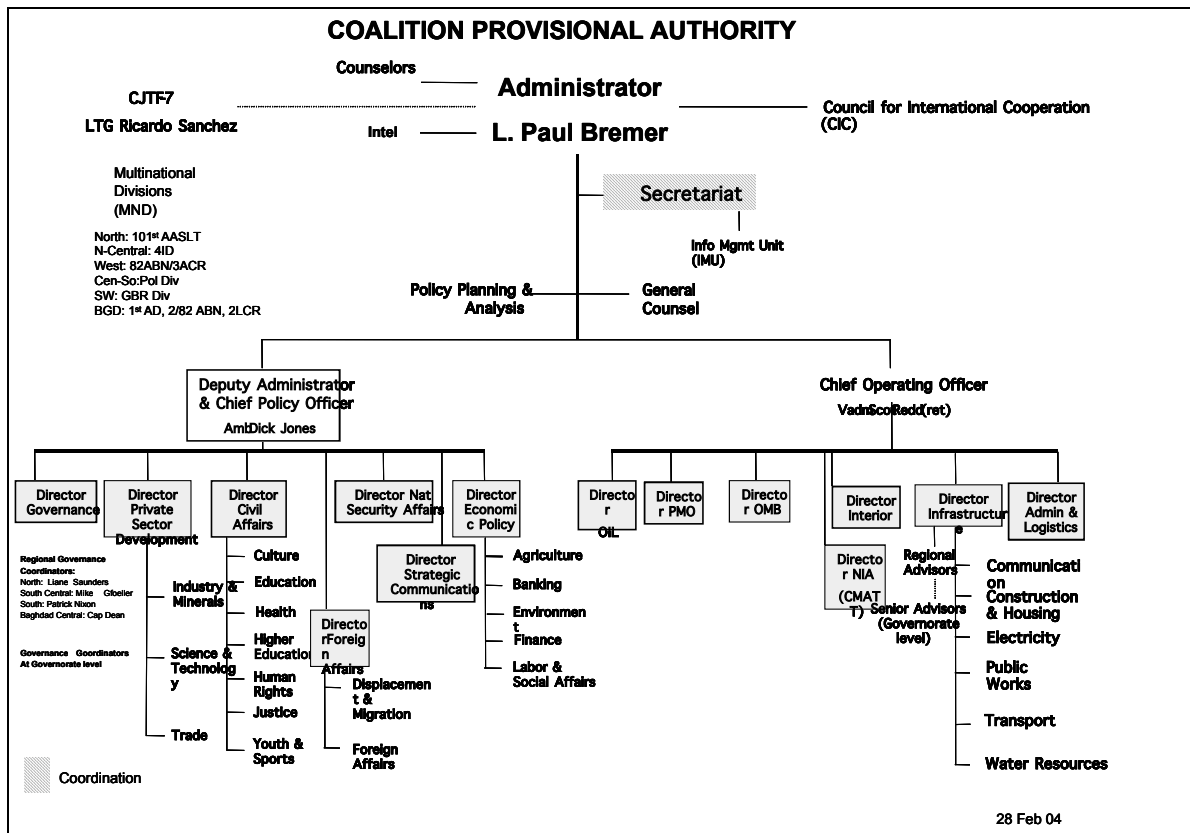


Figure 1: Coalition Provisional Authority structure as of February 2004.

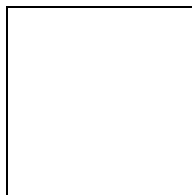


Figure 2: The Coalition Provisional Authority Strategic Plan.

Each sub-task was to be monitored by specific individuals under the COO and CPO each week, evaluated (Red, Amber, Green) for its progress and annotated with a narrative supporting the evaluation. Weekly updates were provided to the Administrator and Monthly and Quarterly reports were made on each component of the plan. The weekly updates were used as agenda items for the Executive Board and through this mechanism provided feedback to the operational sections of the CPA.

GOAL TREE RISK ANALYSIS

The analysis presented here represent just an example of some of the activity of the OPP&A. The first analytic question that was posited was to take a fresh look at the cross cutting risks that had been previously identified. This project was approached by looking at risk as the probability of failure. The document “Towards Transitions²” published by OPP&A identified the over all goals of the CPA transition.

“The ultimate goal is a unified and stable, democratic Iraq that provides effective and representative government for the Iraqi people; is underpinned by new and protected freedoms for all Iraqis and a growing market economy; is able to defend itself but no longer poses a threat to its neighbors or international security”.

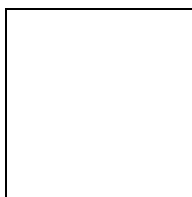


Figure 3: The Initial Goal Tree.

This initial work was then put into a relationship diagram as presented in Figure 3. This relationship diagram captures the focus of the Goal for the CPA. It was believed that the ultimate goal was that Iraq should no longer pose a threat. This goal was to be achieved by several intermediate goals such as forming a democratic government in a market economy. This initial Goals Tree was then viewed against the elements of the Strategic Plan that were seen to be at risk, of priority and less than green in their evaluations. The diagram was then updated as shown in Figure 4. It should be noted that this diagram does not contain oil as a risk object. This lack was discussed, but since the Senior Advisors would not mark the oil sector as anything less than Green, it was felt that the sector should be left off of the analysis for the initial effort. A final workshop at CPA headquarters resulted in one more update of this diagram, as shown in Figure 5.

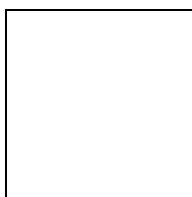


Figure 4: The First Update of the Goal Tree diagram.

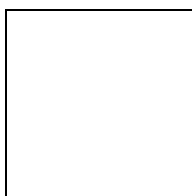


Figure 5: Final Version of the Goal Tree diagram.

² OPP&A, CPA, “Towards Transition in Iraq,” 2004.

Note that the Counter-Insurgency node has moved to directly influence the Goal and that the secondary level has been changed to Civil-Order and Social-Justice to attempt to show a more direct influence. In fact, the final model was a significant redrafting of the update based on interviews and the workshop itself. Once the Goal Tree had been proposed and gained some agreement among the staff, it was necessary to find some technique that would allow the tree to be queried. Bayesian Belief Networks³ were chosen as the most appropriate technique and the Microsoft Belief Network⁴ software was used. Figure 6 is the Bayesian Network representation of the final Goal Tree Model.

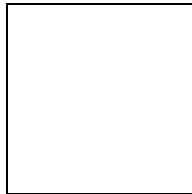


Figure 6: Bayesian Network representation of the final Goal Tree model.

The issues with Bayesian Networks are two-fold. First, what are the nodes and relationships that must be modeled? Second, what are the local probability distributions that hold at each node? In this case, the first problem was trivial since it followed directly from the relationship model that was developed. The second problem was approached in two steps. Step one was to come to agreement on what the necessary states at each node were, then to elicit the distributions.

The states at each node were established as an initial set, in order to apply the model. Due to the nature of the CPA, this state set was not revisited, nor was the initial distribution determinations. Table 1 represents the Node, Node Description, and States of the model that were used. The actual probability distributions are available from the author. Figure 7 represents the Compiled Network. A network is compiled when the prior probabilities are propagated throughout the network. No evidence is yet presented.

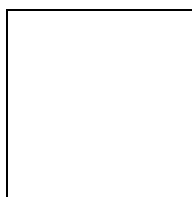


Table 1: Node Descriptions.

The analysis proceeded with hypothesized evidence in order to determine what aspects of the network would have the most effect on the final goal. The initial results were that the two nodes with most direct impact on the Pose-No-Threat node were the Counter-Insurgency and the Societal-Support. The Counter-Insurgency result was not unexpected, however the Societal-Support result was somewhat surprising.

³ See Neapolitan, Richard (1990). *Probabilistic reasoning in expert systems: theory and algorithms*. John Wiley and Sons: New York. And, Pearl, Judea (1987) "Bayesian Decision Methods" in Shafer, Glenn and Pearl, Judea. Editors. (1990).

⁴ As found at <http://research.microsoft.com/adapt/msbnx/>

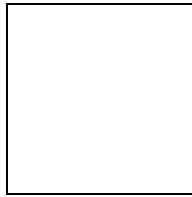


Figure 7: The Compiled Bayesian Network.

RESULTS OF THE ANALYSIS

This analysis was conducted in the mid to late part of March 2004. After it was briefed to the staffs of the Chief Operating and Policy Offices it was not directly used. This lack of impact has several interpretations. First, the April 2004 crisis immediately took the full attention of the entire staff, and this analysis was useful only in whatever way it was remembered by the decision-makers. Second, in May 2004 a follow on effort to develop a list of priorities for Ambassador Bremer used this Goal Tree structure as it's starting point.

Analysis in support of civilian structures can be useful, but requires several pre-conditions that may not have existed in the case of this analysis. These conditions result from the relationship between the decision-maker and the analyst. In the case of this analysis, the analyst was removed from the decision-maker and relied on intermediaries to take the findings forward. Secondly, an expectation of analysis by the decision-maker was not present. The organization functioned much more on the instinct of the leadership and much less on evidentiary processes. This is an indictment, not only of the leadership, but of those of us who were not able to properly prepare them for a unique and difficult job. As this paper is being written, several activities are ongoing to address both of these shortcomings. Lessons can be learned.