TACTICAL DECISION DEVELOPMENT

MARK A. KROEKER
COMMAND COLLEGE II
PEACE OFFICER STANDARDS AND TRAINING
SACRAMENTO, CALIFORNIA
JANUARY 1986

2-0026

This Command College Independent Study Project is a FUTURES study of a particular emerging issue in law enforcement. Its purpose is NOT to predict the future, but rather to project a number of possible scenarios for strategic planning consideration.

Defining the future differs from analyzing the past because the future has not yet happened. In this project, useful alternatives have been formulated systematically so that the planner can respond to a range of possible future environments.

Managing the future means influencing the future--creating it, constraining it, adapting to it. A futures study points the way.

The views and conclusions expressed in the Command College project are those of the author and are not necessarily those of the Commission on Peace Officer Standards and Training (POST).

© 1986 by the
California Commission on Peace Officer
Standards and Training

TABLE OF CONTENTS

Section		Page
I.	Executive Summary	1
II.	Introduction	2
III.	Historical Inputs	8
IV.	Forecast Inputs	28
V.	Imaging Future	50
VI.	Strategic Plan	54
VII.	Transition Management	69
	Bibliography	

I. EXECUTIVE SUMMARY

This report is the product of my research into tactical decision development. For this report, tactical decision development is the process of making California law enforcement command officers more capable in making critical decisions during major emergency operations.

The overall objective of this report is to develop a line of thinking into a real program. I have used a variety of methods to accomplish this objective.

From historical inputs I have drawn a context of major incidents and their heavy demand for good decisions. I have also traced a background of training methods and technology leading to the present.

From forecast inputs, I have attempted to determine which events are likely to call on the best of decision making skills in the years ahead. I have also looked into the future of applicable technology and the military approaches to the problem.

Once I gathered these historical and forecast inputs, I produced an image of a future where the best of methods (simulations) meet with the best of technology (automation) to build the necessary skills among command officers.

The strategic plan arising out of this image calls for a California Center for Tactical Decision Development (CTDD). This Center would provide technologically advanced learning for senior law enforcement officers. A variety of methods would be deployed. Most importantly would be the methods designed to simulate the situations through advanced technology, so that the learner could experience the near reality of the "hot seat" exposure.

This report suggests a philosophy to guide the development of this idea. It also suggests a mission, a goal, a strategy, an organization, a system, a process, proper oversight, a management system, a facility and a budget with suggestions for funding sources.

In order to bring this plan to reality I have proposed a transition strategy. Having identified likely and critical stakeholders, I have recommended specific action steps.

II. INTRODUCTION

This section provides a summary of the objectives and scope of the study.

It describes the strategy and design of the project and the research strategy and tools used to accomplish the objectives.

It provides definitions for the principle terms used.

II. INTRODUCTION

A. Objectives of Study

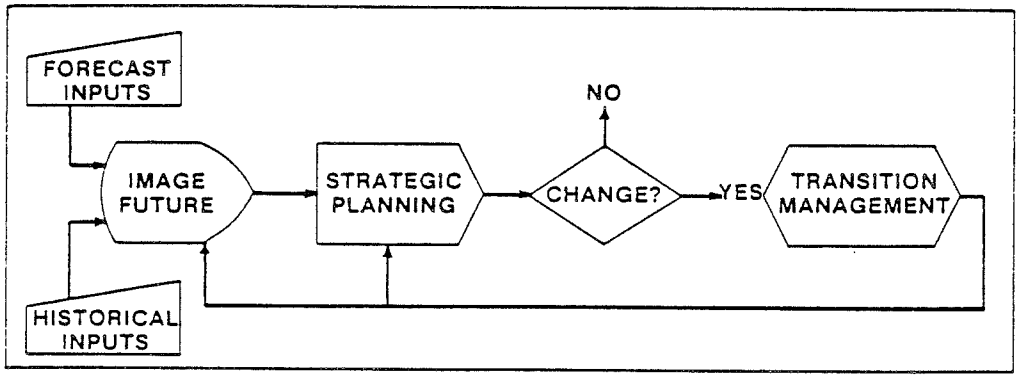
This report is the result of research into the subject of tactical decision development.

1. It is my short-term objective to produce a report that will have the following characteristics:

   a. It will have an orientation toward the future. It should not be so forward looking that is is unrealistic. It should also not be so stepped in immediacy that it fails to account for the future's principal characteristic of surprise.

   b. It will leave ideas, concepts and recommendations which will be adaptable specifically to California law enforcement agencies. It should be adaptable in a more general sense to any law enforcement agency whether national or international. It should be adaptable in a very broad sense to any organization whose senior leadership will face life threatening situations and be required to make rapid critical decisions in response to the situations.

   c. It will follow the Command College Model on Strategic Management as depicted in the following diagram:



   d. It is my objective to produce a study capable of being presented to a group verbally or in summary form in writing.

2. It is my long-term goal to have a positive effect on the quality of tactical decision making among California law enforcement officers as follows in the coming decade and beyond.

   a. They should be better skilled in developing information on which to make decisions.

   b. They should be more knowledgeable in the fundamental principles and concepts involving emergency response.

   c. They should be better experienced in applying judgmental and intuitive skills in decision making situations.

3. It is my desire that the following results will be realized:

   a. More capable decision makers ready to respond to emergencies.

   b. More favorable resolutions of emergency situations.

   c. Less loss of life, injury and property during major emergency situations.

In summary, prevention of death, injury, property loss and human misery is the ultimate ideal which underlies this study.

B. Purpose of Study

The broad purpose of this study was to develop a line of thought into a workable recommendation. It is apparent that the future will hold increasing complexity and difficulty for the tactical decision maker. This study is done on his behalf.

C. Scope of Study

The original scope of this study included all the decision making problems facing senior law enforcement executives. It is my belief that much of management is comprised of decisions. But as this study began it became apparent that decision-making is as broad a topic as living. Therefore to take it in its totality would be to do it a great disservice.

The scope was narrowed by the following process:

1. A personal assessment of the variety of command decisions most critical to life and property.

2. A brainstorming session with five key members of my agency. These members were selected on the basis of their ability to think clearly, broadly and in a "futures penetrating" fashion.

3. Personal interviews of senior command staff in my own agency, with responsibility over operational units.

4. A preliminary literature search into the general nature of decision making needs, skills, and styles in leadership.

   These preliminary reviews led me to conclude that the primary consideration should be life and death issues. More specifically, if the topic potential existed for massive death and human misery, this is the conceptual region where I was to focus. Thus I centered my attention on Tactical Decision Development.

The following term definitions are provided to highlight the restrictive nature of this topic:

1. Tactical - By tactical I am referring to a response to significant emergency situations by law enforcement command officers. I am defining this term as a response to an out of the ordinary emergency situation of substantial proportion. By substantial I mean situations where routine everyday procedures as deployed by field personnel and their immediate supervisors are inadequate to resolve the situation. The potential in these situations exists for major devastation, loss of life, and loss of property. The potential also exists for major public liability exposure and broad negative social and political effects.

   I distinguish tactics from strategy by defining strategy as a broad policy based response to a general situation; whereas tactics are more specific, rapid responses to immediate situations.

2. Decision - I am defining the tactical decision as a determination of choice of actions. Whether based on opinion, information, knowledge, intuition or advise it is articulated and carried out in the attempt to resolve the situation.

3. Development - I am defining development as the strengthening of the human factor. Education provides a tool toward that end. School provides a small part of education. Training is a vehicle which is designed to produce a response. But development is the goal not the

means. When a tactical decision maker is developed, he is ready to calmly sit on the hot seat, evaluate the options and choose one or several courses of action out of a host of alternatives. He does this always with risk and liability for failure. But if he is adequately developed, he will minimize risk and failure. He will decide armed with a balance of confidence and concern. He may be wrong but he will decide.

D. Research Strategy

My strategic approach to this study was guided by the following three basic questions:

1. What will the needs of law enforcement tactical decision makers be in the next decade and beyond?

2. What development methods, systems or models will be best suited to meet these needs?

3. How can technology be best applied to this development so as to avoid both over reliance and obsolescence?

E. Research Methods

The following research methods were deployed in producing this study:

1. Brainstorming Session - This was used to narrow the scope and develop direction during the early stages of the research.

2. Nominal Group Technique - This tool was used in Los Angeles and San Diego to develop a realistic forecast of likely incidents which would call on tactical decision makers to practice their art. It was repeated to identify the incidents which would produce the greatest challenge to law enforcement command decision makers.

3. Literature Search - This method was used to review the writings in the field of:

   a. Decision Making
   b. Disaster Planning
   c. Computer Assisted Training
   d. Artificial Intelligence
   e. Decision Support Systems
   f. Simulations
   g. War Games
   h. Gaming Technology

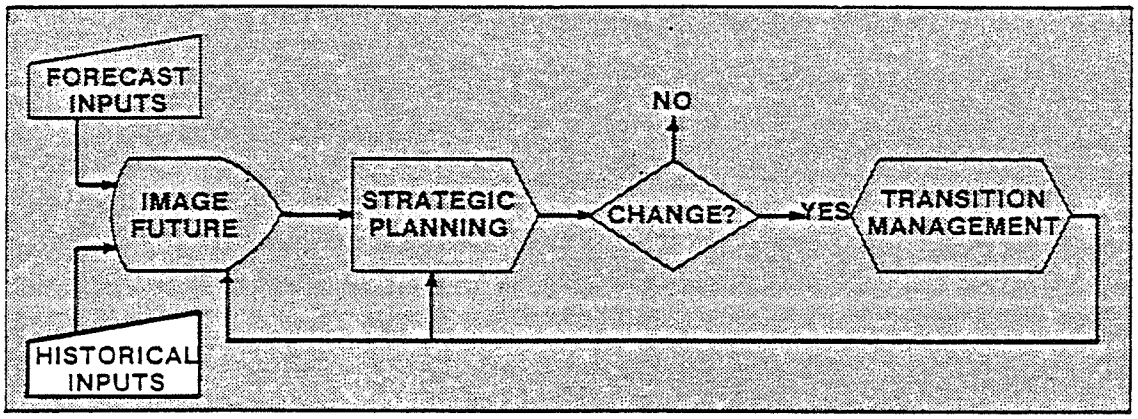
i. Emergency preparedness
j. Expert Systems
k. Decision Support Systems
l. Knowledge Engineers
m. Computer Technology
n. Training - Teaching - Education
o. Human Resource Development
p. Specific Types of Emergency Situations. (i.e. earthquakes, terrorism, hazardous material incidents, etc.)

4. Interviews - This method was used to develop scope, direction and strategy. It was also used to produce ideas, information and cross referencing of findings and observations.

5. Stakeholder Analysis - This method was used to identify the likely stakeholders involved in the implementation of a program recommended by this study.

6. Critical Mass Analysis - This method was used to identify the stakeholders which comprise the critical mass most influential to the implementation of the program recommended by this report.

III. HISTORICAL INPUTS



This section examines the historical context of the problems, opportunities and challenges in the topic area. A historical review of events, ideas on developing decision making skills and related technology.

III. HISTORICAL INPUTS

A. Historical Perspective on Events

> A tragedy of any sort is an unwelcome visitor in our lives. It challenges our established habits and breaks our basic beliefs regarding the predictability and orderliness of the world. It says that the means we have traditionally used to give definition, order, and structure to our existence no longer apply.[1]

When Noah began work on the ark, he did so in response to a rather unusual intelligence system. The information regarding an impending flood was classified as A-1 reliable. He heard it from God. He became a historical figure in tactical decision making by beginning work in response to impending disaster. His response was based on advance warning to which he had time to respond. The result of Noah's tactical choice was the safety and survival of his family to say the least.

> On February 4, 1976, at 0302 hours and 32 seconds, most of the population of Chimaltenago, Guatemala was no doubt sleeping. At 0302 hours and 33 seconds the earth began shaking. It shook for 39 seconds at 7.5 on the Richter Scale of earthquake intensity. In a short time 22,000 Guatemalans were dead, 13,000 in Chimaltenago alone. Another 77,000 were injured. More than three million Guatemalans were affected. One million were homeless. There was no warning. No tactical response decisions could be made in advance of the quake. Many decisions were made afterward in relief and reconstruction.[2]

---

1 Ian I. Mitroff, Mission Impossible - Teaching Corporate America to Think (Los Angeles: University of Southern California, p. 17.

2 Report of the U.N. Disaster Relief Coordinator on the Earthquake in Guatemala (Geneva: United Nations, 1976).

A few seconds after 4:00 a.m. on March 28, 1978 an alarm echoed through the Number 2 Control Room at the nuclear power station at Three Mile Island, Pennsylvania. A series of events which followed turned the incident into a major situation with potential for great devastation. President Carter's Commission reporting on the causes of the accident produced the following statement, "The major factor that turned this incident into a serious accident was inappropriate operator action." The Commission added that the inappropriate action was caused by one thing "confusion."[3] By definition of terms of this study the tactical decision makers responded after the fact. But the assertion can certainly be made that in many unusual situations a lack of decision or "inappropriate action based on confusion" can turn trouble into disaster.

As 1985 ended, analysts reported that it was the worst year ever for terrorism. Representatives from the Rand Corporation were quoted in news reports as producing a tally of over 600 deaths attributed to terrorism.

Included were the following:

The crash of an Air India jumbo jet off the coast of Ireland - 329 deaths for which Sikh extremists took credit.

The hijacking of the Achille Lauro which toppled an entire government in Italy and resulted in the murder of a United States citizen.

The death of 60 people in Malta following a hijacking of an Egyptian airliner. Most of the deaths occurred during a hostage rescue attempt.

An attack by Armenian Terrorists in Ottowa Canada which resulted in the death of a guard.

An attempt by Moslem extremists to assassinate the Emir of Kuwait. He was injured, four were killed.

Thirteen deaths in San Salvador by gunmen at outdoor cafes. Six United States citizens died.
...and others [4]

---

3 Donald Michie and Rory Johnson, The Knowledge Machine (New York: William Morrow and Co., Inc., 1985), p. 62.

4 "Worst Year Yet For Terrorism," Daily News, December 28, 1985, Sec. I, p. 9.

Experts are predicting increases and exportation of terrorism. Mrs. Tamar Pratt, a leading expert on Palestinian terrorism at Tel Aviv University sums it up thus.

> Even relative moderates such as PLO Chairman Yasser Arafat were desperate and disappointed by the indifference of the world and especially Arab states and have thus returned to their roots. Their roots are in the so called path toward the Palestinian state, and we expect in 1986 more terrorist attacks against Jewish, Israeli and American targets.[5]

A systematic review of all disasters and man made actions would be too lengthy. But a quick review of the Classification System for analysis may be useful.

The Society for Disaster, as reported in an International Disaster Institute publication, provides this classification system on disasters.

Atmosphere:	Cyclone and hurricane; tornado; drought, snow and fire
Hydrologic:	Flood, storm surge, Tsunami.
Geologic:	Earthquake, landslide, volcano.
Technologic:	Accident (engineered structures, transport chemicals, nuclear reactors, nuclear weapons testing, radioactive materials, fire); war conventional bombing nuclear weapons.[6]

A simple classification system would be to take all incidents with potential for major loss of life and classify them according to either:

1. Man made

   a. Accident
   b. Conflict
   c. Terror
   d. Psychopathic

---

5 Yosi Melman and Daniel Rauiv, "Terrorists Plan Bloody 1986," Jane's Defense Weekly, (February 22, 1986), p. 321.

6 Sally Levivesley, "Disasters, Disaster Agents and Response. A Bibliography 1982," 6, No. 4, (London: International Disaster Institute, 1982).

2. Natural

   a. Weather
   b. Geologic

Any of the major incidents in the following list could fit into one of these categories. The frequency of emergency decision making incidents is accentuated by the fact that the following represents only a small sampling of occurrences taking place in California during the last two years.

1984

January 17	Two breaks in California Aqueduct near Gorman releases millions of gallons of water, closes Highway 138.
January 24	Tanker truck overturns on Long Beach Freeway, spills 3,500 gallons of toxic chemicals into Los Angeles River.
January 27	Out of control brush fires destroy 12 homes as 1,200 acres burn in La Canada-Flintridge.
February 24	Sierra Nevada mud slide destroys Pacific Gas and Electric power station, blacks out 13,000 homes, spills thousands of gallons of PCB-tainted water into Feather River.
February 25	Barricaded sniper opens fire on Los Angeles school yard. One killed, 13 injured.
March 25	Methodical search continued for deadly explosives from WW II in suburban San Diego.
April 25	Earthquake centered near San Jose injures 11 and causes wide spread damage.
May 10	Six-hour siege of house in Bell leads to release of five hostages, arrest of four armed suspects.
June 29	North Los Angles County brush fire cuts power to 700,000 in California and Arizona.

July 8	Toxic chemical fire at plating company in Orange leads to evacuation of 16-block area.
July 19	San Ysidro massacre is worst single day mass murder in United States history.
August 12	Police disruption of Livermore's Fifth National Cruise leaves 11 officers hurt, 16 jailed when violence ensued with some 10,000 teenagers involved in event that grid locked town's nighttime traffic.
August 24	Wings West commuter plane and private plane collide, 17 dead. Crash ignites brush fire in San Louis Obispo.
August 28	Light plane, after takeoff from Redlands, crashes into tractor-trailer rig on highway. Five killed.

1985

March 26	Methane gas explosion in Fairfax District of Los Angeles demolishes one building, injures 22, sets off raging fires.
May 9	Welders' torch sparks fire in toxic chemical tank at Port of Los Angeles.
June 11	Nationwide hunt continues for Charles Ng, sought in murders of up to 25 people at Calveras County survivalist camp.
June 22	Six people stabbed, security guards assaulted in wave of gang violence at Magic Mountain amusement park during all night party for 25,000 Los Angeles area high school students.
June 25	Evacuation of neighborhood near fire of pesticide warehouse in Anaheim. Ten thousand temporarily homeless.
June 28	Toxic smoke drives 2,200 people from homes in Coachella, Mecca and Thermal after fire envelopes warehouse packed with 25 tons of chemical pesticides and fertilizers.

July 1	Forty-seven homes lost in fire in Normal Heights district of San Diego.
July 3	Arson fire kills two, destroys 53 homes in Baldwin Hills.
July 8	Fifty-five thousand acre Las Piltas brush fire destroys homes, forces evacuation of 2,000 in San Louis Obispo.
August 8	"Night Stalker" sought for seven-month rampage of kidnapping, rape and murder from Orange County to San Francisco.
October 7	Thick smoke from brush fire cuts visibility on heavily traveled Interstate 5, triggering a 33 vehicle collision, including two heavy tractor-trailer rigs. Ten killed and 41 injured.
December 23	Private plane crashes into Bay Area mall crowded with holiday shoppers. Five killed, dozens injured.

The world history of this century is filled with examples of these incidents. Some like the flood in China in 1931 left little decision making to security services in a region because they along with 3 million other citizens perished. Others like the African drought just now beginning to subsist enters the realm of decisions of state, regional policy and international diplomacy. But even localized incidents such as the terrorist hijacking of the "Archille Lauro" in 1985 or the California Highway Patrol arrest of the Fry Brothers in Watts in 1965 can produce events of major proportion. At one point, the decision making seems out of the hands of law enforcement command. The "Archille Lauro" incident produced brinkmanship responses regarding the volatile Middle East. The arrest of the Fry brothers produced a riot which burned a significant part of the city and resulted in more than 30 deaths. Some believe it triggered similar responses in other major cities.

Regardless of the classification scheme, it is obvious that indecision, late decisions or inappropriate decisions can turn minor incidents, into major ones. It is also obvious that decisiveness coupled with timeliness and good quality of the decision can lessen the negative effects of serious incidents, prevent them from deteriorating, and in some cases completely eliminate any detrimental effects. The Israeli raid on Entebbe is a good example.

B. California Decision Development

In the early 20th Century law enforcement in California was as undisciplined as the frontier it represented. Training of any kind for police officers was virtually unheard of. In the middle of the century, corruption began to wane and professionalism as an ideal came into play. Key leaders played significant parts in this transformation. Training was considered a key element of the professional revolution. But little more than on-the-job training was offered to recruit officers. In the 1950's and 60's formal education began to find its acceptability among officers so that by the years of the Omnibus Crime Control Act many officers pursued formal education underwritten by the Federal government. While education grew in acceptability training grew in sophistication and specificity. Specialized training courses were offered in numerous areas through a wide range of presenters. To some extent it followed the history of "continuing education" or "life learning" which ushered in the "Seminar Society" of the 1970's and 80's. The history of command level development has been slower. Larger departments have produced in-house programs on command skills but there have been few programs to build leadership skills during unusual incidents. As a rare exception, the California Specialized Training Institute has several excellent courses on emergency management. Their courses include a number of exercises with role players and referees.

To my knowledge, however, there is no California training program designed exclusively to improve tactical decision making skills among command officers. While there may be textbook self learning, or "in-house" classroom instruction there is little if any training dedicated exclusively to the quality of the decision during these incidents.

C. Decision Development by Gaming

> War and games are both ancient inventions of undying popularity. They continue to evolve side by side, each influencing the other and together forming a reflection of the societies from which they arise. War is not a game, nor are games wars, strictly speaking but the analogy is often useful.[7]

In addition to this rather cynical background, Earl Vickers reminds us that many games are modeled after conflicts of their time. Chess for example is said to have evolved from Chaturanga, Sanskrit for "the army game." The pieces and moves are symbolic of Fifth Century Indian armies. Even older than chess is the ancient oriental game Go. The name Atari grew from the name of one of the moves in this game. Samurai warriors in the Thirteenth Century were educated in principles of war through the game of Go.[8]

Over the years war games took on two varieties. One was the actual deployment of military forces in major exercises. The other was the simulation and mechanical movement of pieces reflecting military elements. Each played their parts and often in concert with each other. For example, a "war room" with its board pieces would reflect movements by elements of actual military activity engaged in an exercise.

Certainly, there was benefit to each variety or combination. It tested logistics, discipline, capability, thinking and command and control. It also tested to some degree the quality of the command decision. More recently, the sophistication of both varieties of war gaming has increased monumentally. This has been in direct proportion to the automation explosion.

---

7 Earl Vickers, "War and Games," Creative Computing, September 1984, p. 146.

8 Vickers, p. 147.

Hybird forms of simulations have taken form with increasing rapidity. Civilian pilots are trained with simulators with great sophistication. Computer graphics will allow them to simulate viewing and landing on any airport they desire any time of day or night and in any kind of weather.[9]

Many automated battle simulations are in existence.

The Army's Janus, created by Lawrence Livermore Laboratories is said to be the most powerful. It is reported to be capable of showing the topographical features of any 15 square mile area on earth.[10]

The air battle simulation Interceptors on Combat Air Patrol (ICAP) was developed by the Rand Corporation. It is intended for use as a means of studying the problems of air defense against long range reconnaissance aircraft.[11]

The Warrior Preparation Center in Europe, jointly operated by the United States Air Force and the United States Army, gives commanders a chance to engage in real time war games. "A computer simulates operations of the intelligence and electronic combat assets as well as all available air and ground resources."[12]

> A typical exercise involves forces at the corps and allied Tactical Air Force levels. About 350 staff and line officers participate in a typical exercise. Their own communications system and mobile command posts are incorporated into the computer simulator and used to receive all intelligence and issue all commands. As a result, the exercise is as near reality as possible for the commanders without involving real troop movements.[13]

---

9 Jack Weber, Tomorrow's World Computers (New York: Arco Publishing, 1984), p. 74.

10 Vickers, p. 147.

11 C. V. Carter, ICAP: A Terminal Zone Air Battle Simulation (Santa Monica: Rand Corporation, 1974), p. 111.

12 "U.S. Simulated War Game Center Begins Operation," Aviation Week and Space Technology, September 3, 1984.

13 U.S. Simulated War Game Center Begins Operation."

Of the variety of exercise which does involve troop movements, the Department of Energy every two years deploys a major exercise testing equipment and personnel of the Nuclear Emergency Search Teams. The exercise is said to cost in the millions and takes one year to plan.[14]

The Warrior Preparation Center is not inexpensive. It cost $14 to $15 million to build and is said to require $2 to $3 million per year in operating budget.[15]

The United States Army's Multiple Integrated Laser Engagement Simulation (MILES), system at the National Training Center (NTC) puts the military commander in a hot seat of battle simulation. Reviewing the mistakes produced by a military commander, Army Major Harvey A. Teston Jr. reported a series of mistakes leading to a significant defeat. Included in the mistakes were loss of time, misunderstanding of commander's intent, poor use of scouts, absence of coordination, poor position of task force commander and poor reporting. Major Teston summed it up thus: "Then what happened or failed to happen that caused this task force fresh from a victory the day before, to be so soundly defeated in such a short time? The cause can be scribed in three words -- command and control.[16]

---

14 Dr. Joseph Krofcheck in a personal interview.

15 "U.S. Simulated War Game Center Begins Operation."

16 Harvey A. Teston, Major, U.S. Army, "Command and Confusion at the NTC," Professional Journal of the U.S. Army, (November, 1985), p. 56.

Law Enforcement Development by Gaming, Simulations and Exercises

Simulations exercises and gaming are not new to the field of law enforcement. Many agencies around the world conduct exercises simulating major unusual events or disasters. The Los Angeles Police Department creates unannounced exercises which test both response capability in the field and decision making skills. Armed with a scenario script, members of the Tactical Planning Section invade a police station and begin the exercise with full authority of the Department command.

The New Orleans Police Department and the FBI produced a training exercise in anticipation of the World's Fair in New Orleans. The eight-hour exercise successfully tested readiness, cooperation, crisis management, and intelligence systems.[17]

Other exercises were not quite too successful. A County Sheriff in Wisconsin was found liable by a trial court for damages arising out of a simulated terrorist incident where the simulated terrorists failed to tell the real victims that the terrorists were not real terrorists.[18]

On interagency exercise said to be effective is the disaster simulation for Australian non-government organizations. Run entirely by telephonic contacts, the exercise tests, "passage of information, clarification of requests, processing of requests, procurement and dispatch of material by air, handling of requests for personnel, selection and dispatch of personnel, rehabilitation and reconstruction planning, emergency applications for government funds. Cooperation and collaboration with other agencies and government.[19]

---

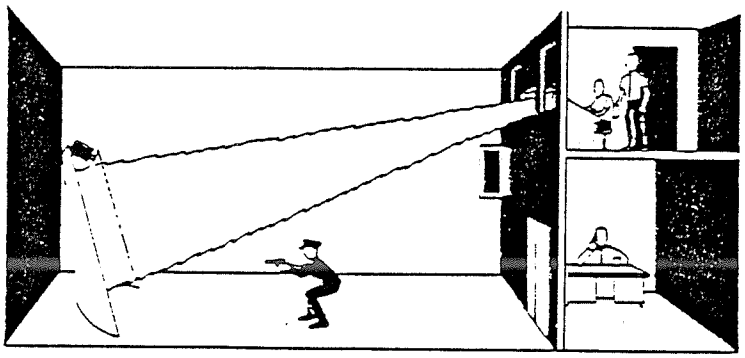
17 Robert Lindsey. "1984 World's Fair Under Siege," Law and Order, April 1985, p. 49.

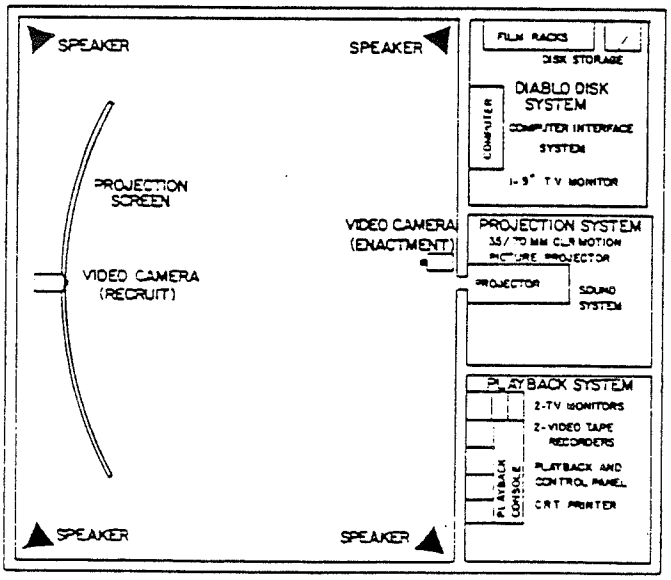
18 "Sheriff Found Liable in Police Hostage Training Exercise," Crime Control Digest, (January 20, 1986), p. 9.

19 Dr. R. F. Morrison. "Disaster Simulation Exercises for Australian Non-Government Organizations," Disaster, (September 3, 1985).

What appears to be lacking in law enforcement is a pure command tactical "war game" type operation to simulate decision making requirements. The Los Angeles Police Department's Development and Evaluation of Firearms Training (DEFT) Simulator now in operation simulates shooting situations requiring decisions on "when to shoot" and development of skill, "how to shoot." With its computer package, this system comes the closest to any simulation, I am aware of, to develop law enforcement decision making skills under real time conditions.

The following diagram depicts the DEFT simulator:





D. Development of Applicable Technology

The following is a short historical review of the technology applicable to the development of decision making skills in law enforcement command officers.

1. The Computer

"No more than six computers will ever be sold in the commercial market."[20]

This rather dogmatic statement was made by Howard Aiken in 1950. Aiken developed IBM's first ever computer. Aiken's computer was not the first to be developed. Alan Turing is said to be the father of the computer. Turing predicted in the 1930's that three machines would satisfy all of Britains needs.[21]

The Mark I, developed at Harvard University, was the first electromechanical digital computer. It became operational in 1945. It is no wonder that Aiken and Turing made their predictions. The Central Processing Unit of the Mark I cost $750,000 in 1944. In 1950 there were only 12 in the United States. In 1960 there were more than 6,000. Today no one can estimate the numbers of computers in the open market.[22]

---

20 Weber, p. 2

21 Weber, p. 2

22 James L. Poirot, Computers and Education (Manchaca, TX: Sterling Swift, 1980), p. 1.

The costs of computers have gone down dramatically and the price continues to go down. The quality of performance and capacity has gone up while size has gone down with the advent and development of integrated circuitry.

About 15 years ago many observers were certain that no computer would ever be able to beat a good chess player. By the end of the 1970's well programmed computers could out play nearly 100 percent of the world's chess players and could play high quality games with each other.[23]

The growth of the computer world has been traced in a genealogy which has had decreasing age spans. This is interesting, when compared to the aging population and the increase in average life span.

The first generation was the progress of Mark I. The Mark I family grew up in the 1950's. Its machines filled several rooms.

The second generation was born from "father transistor." Transistorized computers were smaller, more reliable and cheaper.

The third generation came from the computer chip. The result was more power, smaller size, to the extent of miniaturization and in the 60's and 70's permeation into everyday life.

The fourth generation is a product of VLSI (Very Large Scale Integration). Its memory chips are capable of storing millions of bits of information. The microprocessors of this generation are as powerful as the large computers of the third generation. It is expected to stretch to the end of the 1980's.

The as yet unborn fifth generation has been imaged and begun in a massive effort centered in Japan. Its hope is to produce knowledgeable personal assistants. Its transition is not like any of the ones of the past. It has no resemblance to the transition from tubes to transistors. Rather it resembles the shift from calculator to computer. It suggests a massive change in architecture.[24]

---

23 Margaret O. Hyde, Computers That Think (Hillside, NJ: Enslow Publishers, 1982).

24 Weber, p. 41.

2. Artificial Intelligence

The term intelligence is defined in part by Websters Dictionary as "a capacity to know or apprehend."

The definitions also use such terms as "reason, solve problems, learn, foresee problems, and think abstractly." While it is true that information can be placed into the machines, they do not think nor are they alive simply because a pilot light is on. Rather, they mimic or simulate real thinking. The development of the Artificial Intelligence concept may be overindulged and even dangerous as some suggest[25] but its usefulness cannot be denied.

Artificial intelligence emerged from the world of cybernetics which is defined as the science of control or the science of effective organization.[26] The idea is to make a machine work as close as possible to the manner in which the brain operates. While there may be tons of difference, the steps in the direction have great usefulness. This usefulness is still at the development stage. It marks the threshold to the fifth generation.

> The field of artificial intelligence is a mixture of computer science, mathematics, psychology, linguistics and philosophy. One of its aims related principally to psychology is to understand more about the real human processes of cognition and perception with the aid of computer programs. If we are able to simulate a process, then this gives us some idea of what might be going on in nature.[27]

People in research in the world of artificial intelligence concede that they have not done well in communicating their work to the training engineers. It is these engineers who could make something useful of their research.

So far rewards of contracts and funding seem to keep going into the research world. The seedlings emerging out of this continuous planting and fertilizing will no doubt produce considerable benefit to the world at large.

---

25 Michael Shallis, The Silicon Idol (New York: Schucken Books, 1984).

26 Neil Frude, The Intimate Machine (London: Century Publishing, 1983), p. 39.

27 Frude, p. 39

> Given the newness and volatility, or at least tentative nature of results this (practical lag) is perhaps appropriate. But the time is coming shortly when these transfers to real applications will be made, and the impact of artificial intelligence will seem sudden, profound and inevitable.[28]

3. Decision Support Systems

Decision Support Systems, are given an excellent definition by William Wallace and Frank DeBalogh in their article entitled Decision Support Systems for Disaster Management. They suggest that Decision Support Systems are:

> An integration of computer hardware and software that is designed to complement the cognitive processes of humans in their decision making. Essential ingredients include:
>
> * Data bank
> * A data analysis capability normative models, and technology for display and the interactive use of the data and models.[29]

The Decision Support System according to Susan L. Solomon consists of the following features:

a. Management orientation - rather than clerical.
b. Designed to support, not replace decision making.
c. It functions in semistructured environments.[30]

The key to this description or definition approach is that the computer is deployed as a helper to the decision maker.

---

28 Pamela McCorduck, Machines Who Think (San Francisco: W. H. Freeman and Company, 1979), p. 301.

29 William A. Wallace and Frank DeBalogh, "Decision Support Systems for Disaster Management," Public Administration Review, p. 134.

30 Susan L. Soloman, Simulation of Watting Line Systems (Englewood Cliffs, NJ: Prentice Hall, 1985), p. 361.

4. Expert Systems

"Expert Systems" are the logical offspring of the field of artificial intelligence. An "Expert System" is often produced by a group think process putting together the best of knowledge consisting of both information and intuition into a computer which will respond with a problem solving skill when asked to. While the "Expert System" sounds simple, its construction is a long drawn out process which depends heavily on VLSI. "An expert human practitioner in whatever field sits down with a 'knowledge engineer' who corresponds to the programmer in conventional computing. Together they work out in laborious detail what all the rules should be and how they interrelate."[31]

> Edward Fergenbaum of Stanford University explains the idea thus,' while conventional programs deal with facts, expert systems handle 'lore.' By this he refers to rules of thumb, hunches, intuition and facility for judgment that are seldom explicitly laid down but which form the basis of an expert's skills acquired over a lifetime's experience. Often the lore does not appear in the textbooks."[32]

Applications of this technology have led to medical diagnosis (MYCIN), Medical Chemical Analysis (Dendral) which scientists say is 100 percent reliable, and geologic searches for deposits (Prospector). While these systems are major power houses, others of greatly reduced price are coming on the market: Deciding Factor is $95, and Insight 2 is $95. These are small "expert systems" open to specific programming.

5. Computer Assisted Instruction

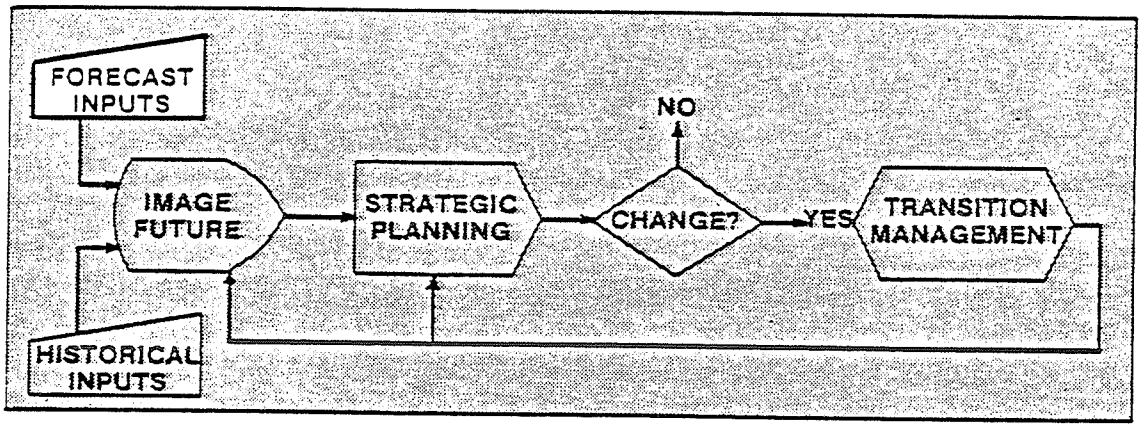
The adaption of the computer to learning is almost as old as the computer itself. Main frame computers were used for instructional purposes as early as 1950 at Florida State University, Dartmouth College and Stanford University. These programs were developed from extensive efforts for design teaching machines which could be used in drill and practice in an attempt to bridge the gap between traditional classroom learning and practice application.

---

31 Michie, p. 40.

32 Michie, p. 38.

IV. FORECAST INPUTS



This section provides a view to the future. An effort is made to systematically identify certain significant unusual events most likely to happen over the next few years. By "the next few years" I am referring to the next three or four years.

I will analyze these incidents to provide a framework of reality to their implications.

I will also provide analysis of likely decisions to be required in response to the incidents. I will identify the special knowledge skills or abilities needed for these decisions. I will describe the training methods likely to be available in the future and the technology most applicable to support these methods.

IV. FORECAST INPUTS

A. What is Going to Happen?

If we could predict the future with a high degree of certainty, we would certainly be better prepared to meet it.

Although the future has a certain fickle quality to it the option of ignoring it is unacceptable. The assumptions we make about the future may be so radically upset that all of our predictions become simply wrong. Nevertheless, if we look to it with systematic and analytical tools and maintain a healthy skepticism to the results we will be better armed to meet it. Ian Mitroff in his book Corporate Tragedies reminds us that we certainly should not apply visions of the world as a "simple machine" or even as a "complex system" but rather as a "complex social network."[35]

With this view in mind, I attacked the question of the nature of the challenge. What will law enforcement command tactical decision makers be facing in the future?

In order to develop fuel for the answer to these questions, I deployed the Nominal Group Technique in two locations in California.

I selected Los Angeles and San Diego because they represent major metropolitan areas with high population. Los Angeles has about 3 million residents and San Diego has about 1 million. Both cities are coastal complexes with vast social and political subsystems. Together with the regions surrounding them, they represent roughly half the population of the State of California.

---

35 Ian I. Mitroff and Ralph H. Kilmann, Corporate Tragedies (New York: Praeger Publishers, 1984), p. 27.

The Nominal Group Technique is a group thinking procedure for generating some ideas and ascribing to them a level of group acceptability. It is not a precision forecasting tool. Nor is it a hit or miss procedure. It provides the opportunity to look squarely into the possible future and try to speak the word "probable" or "likely."

Two separate sessions were held. The one in Los Angeles included the following members in addition to myself as group facilitator:

1. Commander George Morrison, Los Angeles Police Department. Commander Morrison is the Commanding Officer of the Uniform Services Group and is the Department's coordinator of unusual occurrence planning.

2. Assistant Chief Peter Lucarelli, Los Angeles Fire Department. Assistant Chief Lucarelli is a member of the City's Emergency Operations Board Management Committee. The Emergency Operations Board is empowered to make and enforce regulations to govern the City's Emergency Operations Organization during periods of planning and during emergencies.

3. Sergeant Richard Molony, Los Angeles Police Department. Sergeant Molony has extensive background in unusual occurrence preparation. He has been responsible for: coordinating organization and deployment plans for major unusual occurrences, evaluating procedures, tactics and techniques employed during unusual occurrences, and conducting Field Command Post Exercises.

4. Sergeant Stanley Roberts, Los Angeles Police Department. Sergeant Roberts is assigned to the Department's Tactical Planning Section. Sergeant Roberts is responsible for: coordinating organization and deployment plans for major unusual occurrences, evaluating procedures, tactics and techniques to be employed during unusual occurrences, and conducting Field Command Post Exercises.

5. Lieutenant Wilmer Harper, Los Angeles Police Department. Lieutenant Harper has had extensive experience developing contingency plans and procedures for unusual occurrence control and emergency preparedness. He has trained personnel in Field Command Post Operations. Lieutenant Harper has had an extensive military career having served for 20 years in the Marine Corps as a regular and reserve.

6. Joseph Krofcheck M.D. Dr. Krofcheck is a psychiatrist employed by the Rand Corporation as a Residential Consultant. Dr. Krofcheck is also a Specialist Reserve with the Los Angeles Police Department. His fields of expertise are: transnational terrorism, criminal personality profiling, threat analysis and nuclear threat assessment.

The session in San Diego included the following members in addition to myself as group facilitator.

1. Division Chief Leon Wetherington, San Diego Fire Department. Chief Wetherington is responsible for the day-to-day operations of the fire departments efforts in:

   * Fire suppression
   * Medical aid
   * Rescue operations
   * Inspection programs

2. Lieutenant Jerry Sanders, San Diego Police Department. Lieutenant Sanders is currently director of the San Diego Police Academy. He was formerly commanding officer of the San Diego Police Department's Special Weapons and Tactics Team.

3. Lieutenant Dan Berglund, San Diego Police Department. Lieutenant Berglund is currently assigned as the commanding Officer of San Diego Police Department's Special Weapons and Tactics Team.

4. Lieutenant Bob Jones, San Diego Police Department. Lieutenant Jones is currently in charge of San Diego Stadium security and staffing. He has served as commanding officer of San Diego Police Department's Tactical Unit and Special Weapons and Tactics Team.

During each group session the recommended Nominal Group Technique steps were employed:

<u>Nominal Question #1</u>

The first nominal question was distributed to the group in writing. It posed the following question:

> "What major unusual events do you expect will occur in California within the next few years, which will call on law enforcement command personnel to make rapid, critical tactical decisions?"

Each group was requested to think openly, broadly, and silently. The group was asked to record their responses silently. Then the responses were solicited in round robin fashion taking one suggestion from each member at a time. The ideas were recorded on a flip chart. When the group had exhausted its ideas there was a discussion of each suggestion.

Los Angeles Group Results

The Los Angeles group produced the following original list:

1. Earthquake with accompanying tsunami.
2. Terrorist incident involving nuclear extortion.
3. Major storm affecting several major population centers.
4. Major hazardous materials incident.
5. Environmental contamination incident.
6. Major ethnic-racial conflict.
7. Nuclear accident at nuclear power site.
8. Economic based riot.
9. Food riot.
10. Major emergency prediction requiring wholesale evacuations.
11. Major brush fires.
12. Communicable disease epidemic.
13. Terrorist attack on a contained site.
14. Aircraft disaster.
15. Biological threat to natural resources (terrorist).

16. Volcanic eruption.

17. War.

18. Traffic grid lock.

19. Systemic terrorist attacks involving several variable targets.

20. Nuclear materials accident.

21. "Tylenol" type terrorist extortion.

22. Major disruption of communication system by terrorists.

23. Labor crisis - strikes - shutdowns and resulting unrest.

24. L.N.G. disaster - explosion -fire - spread.

25. Terrorist attack on oil platform.

26. Tsunami (later merged with earthquake).

27. Military coup.

28. "100 Year Flood" affecting major metropolitan area.

29. Mass transit (ground) accident.

30. "High-rise" fire-radiated heat starts fire in other buildings.

San Diego Group Results

The San Diego group produced the following original list:

1. Earthquake with accompanying tsunami.

2. Nuclear reactor accident.

3. Dam break - natural.

4. Organized racial violence.

5. Terrorist incident.

6. Power failure - major and widespread.

7. Hazardous material spill in heavily populated area.

8. Major fire in metropolitan area.

9. Major strike activity.

10. Airline crash in city or populated area.

11. Major prison violence.

12. Storm - flood, tornado, high surf, mud slide, etc.

13. Major demonstrations - nationwide re: Central America.

14. Toxic extortion - water or environment.

15. Building collapse - hotel, office, convention center, etc.

16. Large scale terrorist incident at border.

17. International border incident involving U.S. and Mexican authorities.

18. Racial violence.

19. Major brushfire.

20. Large scale street warfare involving drug groups.

21. Narcotics transportation incident with heavily armed suspects.

22. Major cruise line disaster - collision, fire, etc.

23. Terrorist incident involving cruise ship.

24. Terrorist bombings involving political targets.

25. Product poisoning.

26. Large scale hostage incident.

27. Terrorists take over airliner.

28. Terrorists take over military base.

29. Terrorist nuclear threat - extortion.

30. Law enforcement and fire services work action - strike.

31. Energy crisis - "gas riots."

32. Drug laboratory deactivation.

33. Anti-nuclear demonstrations.

34. Prolife/proabortion bombings.

35. Hazardous materials incident - extortion or attack.

36. BLVE (Boiling Liquid Vapor Explosion).

37. Dam break - terrorist action.

38. Hostage incident-related to convention.

39. "Blackout" by terrorist action.

Upon clarification of contributions, the groups were asked to produce a preliminary vote. The voting method was the one recommended by the Nominal Group Technique. The group was asked to select from the entire group a list of seven most likely candidates. Then they were asked to silently rank order the responses in priority fashion starting with the least likely, then most likely, etc.

NOMINAL QUESTION #1

Los Angles Group Results

The voting in Los Angeles arranged the suggestions in the following order:

VOTE TALLY

34	Earthquake with accompanying tsunami.
28	Major hazardous materials incident.
23	Systemic terrorist attacks involving several variable targets.
18	Terrorist attack on a contained site.
13	Aircraft disaster.
11	Major brush fires.
7	Major storm affecting several major population centers.

6	Major emergency prediction requiring wholesale evacuations.
5 tie	Environmental contamination incident.
5 tie	"High-rise" fire - radiated heat starts fire in other buildings
4 tie	Communicable disease epidemic
4 tie	Biological threat to natural resources (terrorist)
4 tie	Nuclear materials accident
2	Economic based riot
1 tie	Terrorist incident involving nuclear extortion
1 tie	Nuclear accident at nuclear power site
1 tie	Traffic grid lock
1 tie	"Tylenol" type terrorist extortion

San Diego Group Results

The voting in San Diego arranged their list in the following order:

25	Hazardous material spill in heavily populated area.
23	Major brush fire.
18	Storm - flood, tornado, high surf, mud slide, etc.
14 tie	Terrorist incident.
14 tie	Terrorist bombing involving political targets.
11	Earthquake with accompanying tsunami.
7 tie	Airline crash in city or populated area.
7 tie	Major demonstrations - nationwide re: Central America.
6	Large scale hostage incident.
5	Major fire in metropolitan area.
4	Racial violence.
3	Organized racial violence.
2	BLVD (Boiling Liquid Vapor Explosion)
1	Nuclear reactor accident.

When merging the items in Los Angeles by broader categories the votes produced the following top four candidates.

NOMINAL QUESTION #1

All Terrorist Incidents

Systemic terrorist attacks involving several variable targets.	23
Terrorist attack on a contained site.	18
Biological threat to natural resources (terrorist).	4
"Tylenol" type terrorist extortion.	1
Total	47

Natural Disaster

Earthquake with accompanying tsunami.	34
Major storm affecting several major population centers.	7
Total	41

All Hazardous Materials Incidents

Major hazardous materials incident.	28
Environmental contamination incident.	5
Nuclear materials accident.	4
Nuclear accident at nuclear power site.	1
Total	38

Fire

Major brush fire.	11
"High-rise" fire - radiated heat starts fire in other buildings.	5
Total	16

When merging the items and votes in San Diego by broader categories, the votes produced the following top four candidates:

NOMINAL QUESTION #1

Natural Disaster

Storm, flood, tornado, high surf, mud slide, etc.	18
Earthquake and accompanying tsunami.	11
Total	29

All Terrorist Incidents

Terrorist incident.	14
Terrorist bombing involving political targets.	14
Total	28

Fire

Major brush fire.	23
Major fire in metropolitan area.	5
Total	28

All Hazardous Materials Incidents

Hazardous material spill in heavily populated area.	25
Total	25

NOMINAL QUESTION #2

Upon completion of the work in response to the original question, another question was posed to the groups as follows:

> "Of all these incidents, which do you feel will present the greatest challenge for law enforcement command decision makers?"

The groups were again asked to select seven most promising candidates in response to the nominal question. In Los Angeles one member had to leave by the time this vote was cast.

Los Angeles Group Results

The voting in Los Angeles produced results in the following order:

VOTE TALLY

37		Earthquake with accompanying tsunami.
26		Systemic terrorist attacks involving several variable targets.
17	tie	Major hazardous materials incident.
17	tie	Terrorist attack on a contained site.
14	tie	Terrorist incident involving nuclear extortion.
14	tie	Major emergency prediction requiring wholesale evaluations.
7		Major storm affecting several major population centers.
6		Aircraft disaster.
5		Environmental contamination incident.
4	tie	Nuclear accident at nuclear power site.
4	tie	Economic based riot.
4	tie	Communicable disease epidemic.
4	tie	Nuclear materials accident.
3		Biological threat to natural resources (terrorist).
2	tie	Traffic grid lock.
2	tie	"100 Year Flood" affecting major metropolitan area.
1	tie	Major ethnic-racial conflict.
1	tie	Major brush fires.

San Diego Group Results

The voting in San Diego produced results in the following order:

21		Terrorist nuclear threat - extortion.
20		Earthquake with accompanying tsunami.
13	tie	Terrorist incident.
13	tie	Terrorist bombings involving political targets.
11		Nuclear reactor accident.
10		Large scale hostage incident.
9	tie	Terrorist incident involving cruise ship.
9	tie	Hazardous materials incident - extortion or attack.
8		Hazardous material spill in heavily populated area.
6	tie	Major brush fire.
6	tie	Terrorists take over airliner.
4		Product poisoning.
3	tie	Major fire in metropolitan area.
3	tie	Major demonstrations - nationwide re: Central America.
2	tie	Airline crash in city or populated area.
2	tie	Storm, flood, tornado, high surf, mud slide, etc.

When merging the items in Los Angeles by categories, the votes produced the following top four candidates:

All Terrorist Incidents

Systemic terrorist attacks involving several variable targets.	26
Terrorist attack on a contained site.	17
Terrorist incident involving nuclear extortion.	14
Biological threat to natural resources (terrorist).	3
Total	60

Natural Disasters

Earthquake with accompanying tsunami.	37
Major storm affecting several major population centers.	7
"100 Year Flood" affecting major metropolitan area.	2
Total	46

All Hazardous Materials Incidents

Major hazardous materials incident.	17
Environmental contamination incident.	5
Total	22

Nuclear Incidents

Nuclear accident at nuclear power site	4
Nuclear materials accident	4
Total	8

San Diego Group Results

When merging the items in San Diego by categories the votes produced the following top four candidates:

All Terrorist Incidents

Terrorist nuclear threat - extortion.	21
Terrorist incident.	13
Terrorist bombing involving political targets.	13
Terrorist incident involving cruise ship.	9
Terrorist take over airliner.	6
Total	62

Natural Disasters

Earthquake with accompanying tsunami.	20
Storm, flood, tornado, high surf, mud slice, etc.	2
Total	22

All Hazardous Materials Incidents

Hazardous materials incident - extortion or attack.	9
Hazardous materials spill in heavily populated area.	8
Total	17

Nuclear Incidents

Nuclear reactor incident	11
Total	11

ANALYSIS

It is interesting to note that both in Los Angeles and San Diego the same categories of incidents are thought most likely to occur. Terrorist incidents edging out natural disasters, hazardous material incidents and fires. In other words, according to group thinking of selected groups in Los Angeles and San Diego, terrorism is the major incident deemed most likely to occur in California over the next several years.

When the question is posed as to which category of incident presents the most significant challenge, terrorist activity emerges as a distinct leader. It is followed by natural disasters, hazardous materials incidents and nuclear incidents.

"What is better than presence of mind in a disaster? Absence of body." - Pundi [36]

IMPLICATIONS

These results do not come as a shock to me. The results analytically confirm. The thoughts that many of us in law enforcement have been having for some time.

The list of items in their more specific descriptions may be useful to emergency planners in California law enforcement. I intend to distribute these to key planners separate from the major recommendations of this report.

SCENARIOS

The following three scenarios depict the possible development of events in the top three categories identified by the nominal groups, as most challenging.

Terrorism

At 3:00 p.m. on a Friday afternoon three heavily armed suspects ran into the El Al ticket counter area at Los Angeles International Airport. They opened fire on the ticket agents and a crowd of passengers waiting to board a flight scheduled for departure at 4:00 p.m. Explosive grenades are tossed over the ticket counters and the suspects leave the area in a dark van with no license plates. The entire attack takes less than 30 seconds.

---

36 William A. Delaney, The 30 Most Common Problems in Management and How to Solve Them (New York: Amacom, 1982), p. 102.

At 3:05 p.m. on the same day an explosive device is detonated at the home of an Israeli consular official. Original reports indicate that a domestic employee has been killed in the bombing which destroyed most of the structure.

At 3:15 p.m. on the same day radio station KFWB reports a telephone call from a caller identifying himself as Libyan and announcing that the Israeli Consul General, along with three of his aides, are being held hostage at the Bonaventure Hotel in downtown Los Angeles. The caller announces that the bombing and airport attack are all part of the guerrilla effort on behalf of the Free Palestine Movement.

Hazardous Materials

On a Sunday morning a major collision involving two tanker trucks occurs at the Los Angeles freeway interchange. One truck is carrying a highly toxic waste liquid which has fumes considered to be deadly. The other truck is carrying aircraft diesel fuel. Both drivers are killed in the collision. A major fire erupts and defies attempts to extinguish it. The toxic matter runs into storm drains and sewers. Preliminary reports are that 25 residents in the surrounding neighborhood have succumbed to the fumes and have died. Others are wandering around in a stupor. There is no wind. The area of devastation is widening as the liquid permeates the runoff system. Several rescue personnel have suffered toxic effects and are being rushed to nearby hospitals.

Natural Disaster

At 2:00 p.m. on a Tuesday afternoon, a major earthquake hits with an epicenter just off the coast of San Pedro. Measuring 7.5 on the Richter Scale, the quake continues for about 30 seconds. Major property damage has been reported in San Pedro where gas lines have erupted. Electricity is out, fires are raging. Many of the older buildings have collapsed. Downtown Los Angeles has felt the shock and there is considerable damage. Several older buildings have collapsed. At 2:05 p.m. a major wave of approximately 40 feet is headed for San Pedro and the Los Angeles Harbor. It is sighted by aircraft pilots in holding patterns awaiting rerouting instructions.

B. What Will We Do?

Reflecting on these scenarios brings up some suggestions about the nature of decisions.

The following matrix provides a review of the characteristics of law enforcement command decision making during the incidents described in the scenarios. These characteristics were developed during a brainstorming session. The participants were shown the scenarios and asked the following question, "What special knowledge, skills or abilities will be required of law enforcement command officers in charge during these incidents?"

Special Knowledge

Knowledge of:	Terrorism	Hazardous Materials	Earthquakes
International Politics	X		
Prexisting Plans	X	X	X
Interagency Involvement	X	X	X
Counter Terrorist Tactics	X		
Weather		X	
Evacuation Procedures	X	X	X
Groups Which Might Assist	X	X	X
Community Inputs	X	X	X
Press Relations Strategy	X	X	X
Potential Targets	X	X	
Lead Agency	X	X	X
Alternative Radio Communication Methods	X	X	X
Crime Scene Preservation	X	X	
Nature of Chemical Proprietaries		X	
Command Post Procedures	X	X	X

Special Skills

Skill in:	Terrorism	Hazardous Materials	Earthquakes
Situation Analysis	X	X	X
Developing Plans	X	X	X
Coordination of Resources	X	X	X
Delegating Effectively	X	X	X
Command Level Decision Making	X	X	X
Communication Oral/Written	X	X	X
Calming People	X	X	X
Diplomacy With Other Agencies	X	X	X
Directing and Taking Orders	X	X	X

Special Abilities

Ability to:	Terrorism	Hazardous Materials	Earthquakes
Remain Calm Under Pressures	X	X	X
Develop Information Sources	X	X	X
Control the Situation	X	X	X
Execute the Plans	X	X	X

C. How Can We Develop Those Skills?

The following alternatives are available for the student of decision making skills.

1. Literature (textbook) Information

While some good ideas may be found here, this technique has the following major liabilities.

a. Motivation of the learner.
b. Lack of uniformity of information.
c. Obsolescence of information.
d. Time consuming.
e. Not specific.
f. Lack of uniformity of interpretation.
g. Lack of feed back.
h. Absence of application to "real world" situations.

2. Training Courses (in-house or external)

While some of these such as the California Specialized Training Institute Programs are good, the general method has liabilities as follows:

a. Information is forgotten rapidly.
b. Classroom instruction may not have applicability to more than 2/3 of the class.
c. Rapid learners can get bored, slow learners can fall behind.
d. Learning is vulnerable to distractions.
e. Costly process. Training courses are time consuming and rarely use time to maximum efficiency.
f. Restricted in content. Decisions or alternatives available are normally less in number than those found in the "real world."

3. Personal Experience

There is nothing quite as effective as experience to train us. Then, we have a tendency to forget.

While experience tries its best to teach us we react to it sometimes in a dense and unresponsive way. I conclude that it may be a good teacher, but it is not the best. It too has liabilities:

a. The loss of learning is too great.
b. The experiences are too infrequent to provide a running classroom. The result is that we forget.
c. The past experiences may not be relevant to the future needs.
d. Incidents are rarely set in learning environment.
e. Experience is subject to the "halo effect." If the occurrence is resolved successfully participants tend to neglect any negative aspects.
f. Even shared experiences may be interpreted differently.
g. Restricted in benefit to only those participating in actual event.
h. Does not provide opportunity for development of skills needed at levels more advanced than participants.

4. Exercises

The field exercise is an excellent tool for testing response logistic availability, command skills and decision making. It can also test and develop knowledge of resources and skill in deploying them. Exercises also have liabilities:

a. They are costly. They deploy resources and take the time of law enforcement field units at a time when response time to ongoing emergency services is a high priority.
b. They seem to be more oriented toward testing than developing.
c. They are so infrequent that the experiences learned may be rapidly forgotten.
d. They are relegated to a small group of decision makers, frequently, only one decision maker, who will probably not be in charge during the "real thing."
e. The learning experience is relegated to a select few or those motivated to read"after action reports" or attend "debriefings."
f. Logistical support can be over burdening.
g. Exercises are normally very restrictive. Short in duration and void of many "real world" complications.

In short all the development methods currently in use in California have benefit. They can gear up the learner but they are in sum sporadic, quickly forgotten, or they cost too much.

D. What Views do Military Career Professionals Have on Decision Development Methods?

Modern warfare demands swift command decisions based upon the instant analysis of data and the organized, efficient management of resources. Military decision makers must be able to perform under pressures never before experienced in history. Short of war itself how can meaningful training be provided to these individuals?

> Until the mid-nineteen seventies, fundamentals of combined arms operations were taught in the classroom. Battalion and brigade commanders and their staffs obtained their practical experience either through field maneuvers or actual battle. In the 1970 time frame, austerity in funds precluded extensive field maneuvers as a viable training alternative. The Army recognized the need to train large numbers of battalion and brigade level leaders and staff officers in a short period of time with a minimum expenditure of funds. The Army was also concerned about the type of training that battalion and brigade level personnel should be receiving. The Army wanted to be sure that future battalion/brigade personnel would be prepared to perform critical tasks and make critical decisions under the stress of combat environment. As a result, the Combat Arms Training Board (CATB) was chartered to develop an automated capability for conducting command post exercises. CATB developed the requirements for a Combined Arms Tactical Training Simulator (CATTS).[38]

From the implementation of CATTS to this date the Army has grown to depend heavily upon training simulation systems. These systems have been refined so as to drive the military decision maker through the decision making process under simulated combat conditions, providing them not only with experience in how to fight a battle, but also how to manage it.

In September of 1984 the United States Marine Corps conducted a Tactical Decision Making Training Survey. The purpose of the survey was to address the following concerns:

---

38 Army Training Battle Simulation System, Link Simulation Systems Division, The Singer Company, Silver Springs, Maryland.

> The increasing complexity and sophistication involved in modern warfare, combined with the dramatic increases in the cost of fuel, equipment, maintenance, and the diminishing defense budget have resulted in the recognition by the Marine Corps for the necessity to develop new and effective, more cost efficient methods for tactical decision-making training at all levels of command.

Traditionally, the Marine Corps has depended on field exercises and formal schools settings as the major vehicle for tactical decision-making training. However, given the magnitude of the expenses incurred in conducting field exercises, both air and ground, the Marine Corps is searching for effective alternatives for training the tactical decision-making action cycle.

Captain Maurawski, assigned to the Naval Equipment Center, Orlando, Florida, provided the following synopsis of the results of the extensive survey. Of the over 4,000 officers responding it was clearly indicated the amount of tactical decision making training needs to be increased. The greater the responsibility of the officer, the higher the rank, the greater the preference for computer assisted simulations. Eighty-seven percent of company grade officers, major and higher, agreed that computer assisted war games are more effective than manual war games are more effective than manual war games.

When queried as to how tactical decision making skills were acquired and currently maintained the overwhelming response was through on the job training. The Marine Corp had previously determined that on the job training for tactical decision making skills result in lack of uniformity, inconsistency and varying degrees of proficiency.

E. What Technology Can Best Support The Development Methods?

Technologies discussed in this report as historical inputs can be deployed in the traditional learning methods. For example:

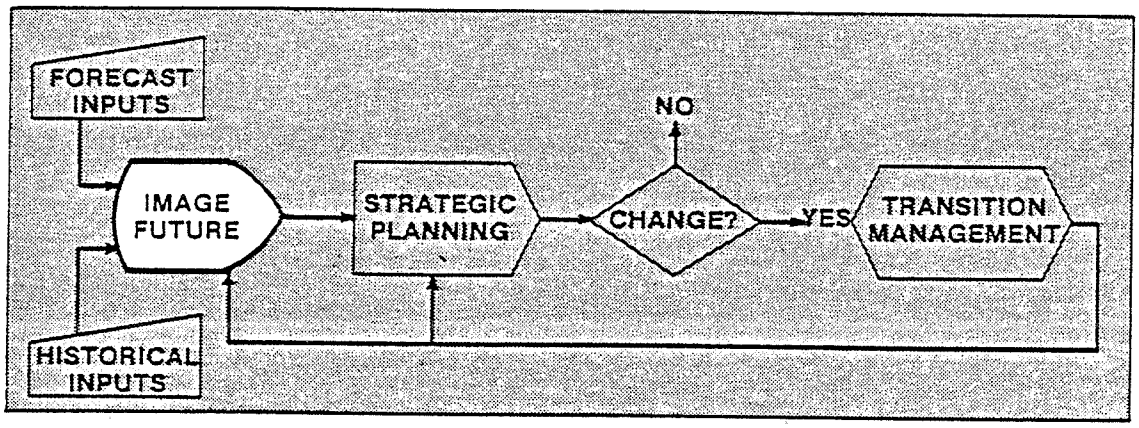
Artificial intelligence with its expert systems can be of use in training courses and exercises. These could be deployed as personally built systems to substitute for personal experience. The limitations of user computer literacies would detract from widespread use.

Computer aided instruction could and certainly has been used in classroom instruction. It could also be used to supplement field exercises. The problem is that in many cases the same capabilities or limitations apply whether with or without computer aided instruction.

Decision support systems can be used to develop an awareness of the decision making needs. The computer literacy level and reluctance to use them would still pose limitations.

In sum all these technologies can be brought to bear in the traditional methods of development. But to do so is to put a mini computer in a covered wagon. It certainly would do some good to the pioneer family. The problem is that the computer and the wagon are from different generations. They may constitute a helpful match but they are not the best match.

V. IMAGING THE FUTURE



In this section I will deduce from the historical inputs and the forecast inputs, a vision of a desired future. I will describe the ideal situation which California law enforcement could evolve into in the years to come.

V. IMAGING THE FUTURE

A. Demands

1. The Past

The past has produced a long list of events which have challenged tactical decision makers. Man-made and natural incidents of many varieties have led to major disruptions of humankind. Death, injury and misery has ensued. In some cases the quality of decisions has been of great benefit to the situations. In others, indecision or bad decisions worsened the situation.

In California, responses to these situations has produced a body of knowledge and capability which is undisputed but inadequate. Formalized methods of developing the decision makers have been devised over the years as a natural outcropping of professionalism. These have improved, but fall prey to the liabilities of classroom training.

Meanwhile technological advances of Artificial Intelligence, Expert Systems, Computer Assisted Instruction, Decision Support Systems and others continue to be held at bay from the crux of the tactical decision development problem.

2. The Future

The future predicts at least as much and probably more turbulence than the past. The emerging complex social network view warns us that events and incidents will be triggered by the continual ideological struggles which have produced man-made disasters. Nature runs its own course and its effects can and will be frightening.

An identification of events deemed likely to occur produced by a group thinking process centered on three areas of concern for California; terrorism, hazardous chemicals and earthquakes. The scenarios painted in reaction to these identifications produced a list of knowledge, skills and abilities needed by law enforcement command officers for these and by idea transfer, other forms of unusual events.

Yet the available future suggests only traditional methods of developing the decision making skill with their obvious limitations. Also, the applicable technologies are still beyond the breakwaters as to their application to developing the skills.

In sum the demands will continue and intensify. The opportunities for reacting to these demands are wide open.

B. Opportunity

1. The Image

The time is ripe for California law enforcement to bring it all together at the very intersection of need.

There needs to be a merger of streams which have been proceeding in their own channels.

Tactical decision development must join up with gaming, Artificial Intelligence, Computer Assisted Instruction, Expert Systems and automated simulations. To these should be added the ingredients of human resource development systems, decision support systems, management information systems. Most importantly, we need to be ready to clinch this merger with the advent of the approaching fifth generation. The Japanese have set their sights on the 1990's to unleash "machines projected to be able to 'understand' natural language and speech, interpret the visual world, tap knowledge bases and solve problems by deductive and inductive inference.[38]

These are the ingredients. It is my belief that they can be brought together. In the coming pages I will suggest a recipe for doing it.

2. The Vision

The vision I have in tactical decision development is of a statewide cadre of fully developed tactical decision makers at the upper ranks of their organizations. Their knowledge, skills and abilities will be sufficient to provide effective leadership through sound decisions at the moment of truth. In this group will be a body of intuitive decision makers. They will be flexible enough to respond individually and with their best judgments in

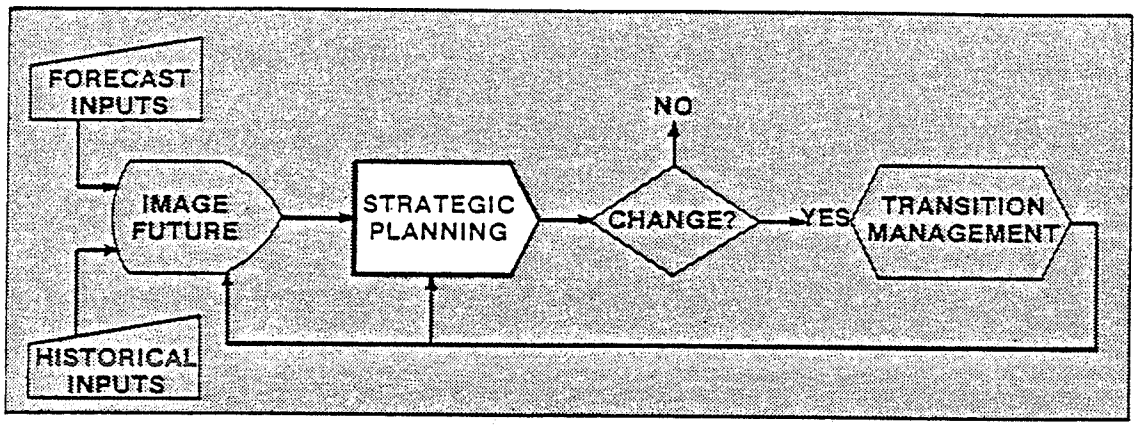
---

38 Michie, p. 82.

response to the individual character of the incidents. Yet they will have implanted in their nature enough systematic capability so that any major incident could be entrusted to their leadership.

The "Strategic Management" model of the California Command College includes by implication a decision point. That is, whether upon developing historical and forecasting inputs and producing a vision for the future is change called for. Yes or no? The decision is yes.

VI. STRATEGIC PLAN



In this section I will propose a plan for the development of tactical decision making skills among California senior law enforcement officers. I will propose an organization designed to accomplish this development. I will suggest a philosophy to guide the planner's thinking. I will propose a specific structure of a system with a mission, goal and strategy. Finally, I will address issues of management, funding and site development.

VI. Strategic Plan

A. Organization

1. California Center for Tactical Decision Development (CTDD).

I am proposing the creation of a CTDD. This organization would be a new and distinct California organization with its own philosophy, mission, strategy design technique, oversight, management and facility. These elements will all be described in the narrative which follows. The CTDD should be established as a private foundation in order to avoid the negative effects of government bureaucracy.

2. Philosophy

a. Philosophy on decisions.

It has been said that "...all management activity revolves around decision making."[39] Decision making is the very essence of leadership effectiveness, especially in military or paramilitary organizations such as those represented by law enforcement.

In a general management sense decisions form the element of change for organizations. In a day-to-day operation they are often made with very little thought. In fact, human adults are said to make hundreds of insignificant decisions each day of their lives. Those decisions are often of little or no consequence to the organization or the individual. Those who find it difficult to make decisions may have a neutral effect on the organizations or constituencies because the

---

39 Robert H. Bonczek, et al., Foundations of Decision Support Systems (New York: Academic Press, 1981), p. 12.

decisions are of little consequence. They may be poor time managers because indecision takes longer. But they are generally harmless types. However, when confronted with the extraordinary situations or the major crisis situations a new dimension arises. Now the indecisive individual or the one with poor decision skills is highlighted. His indecision can be costly because late decisions are often worse than bad ones.

Bad decisions, or ill-founded ones can have major negative consequences especially when lives are at stake.

Peter Drucker organizes decision situations into the following scheme:

* True generic event of which a single occurrence is only a symptom.

* An event unique in the particular department or organization.

* An event that appears unique but in reality is the first manifestation of a new generic problem.

* A truly exceptional event unlikely to occur again in the foreseeable future.[40]

The events likely to challenge law enforcement decision makers in the years ahead fall under each of these categories. The ones that will truly challenge us are the ones which Drucker would call truly exceptional events. These are the ones where lives are at stake. In this category, the indecisive or ill advised decision maker can be a major liability.

Effective decision makers especially in tactical situations operate with power, perception and design.

---

40 K. J. Radford, Managerial Decision Making (Reston, VA: Prentice Hall, 1975), p. 14.

Power is the directive force. The ability to govern and to eliminate that which is unresponsive. Perception includes vision and insight. It is the ability to observe, and gather information. Design is the ability to formulate,that is to formulate models of thought.[41]

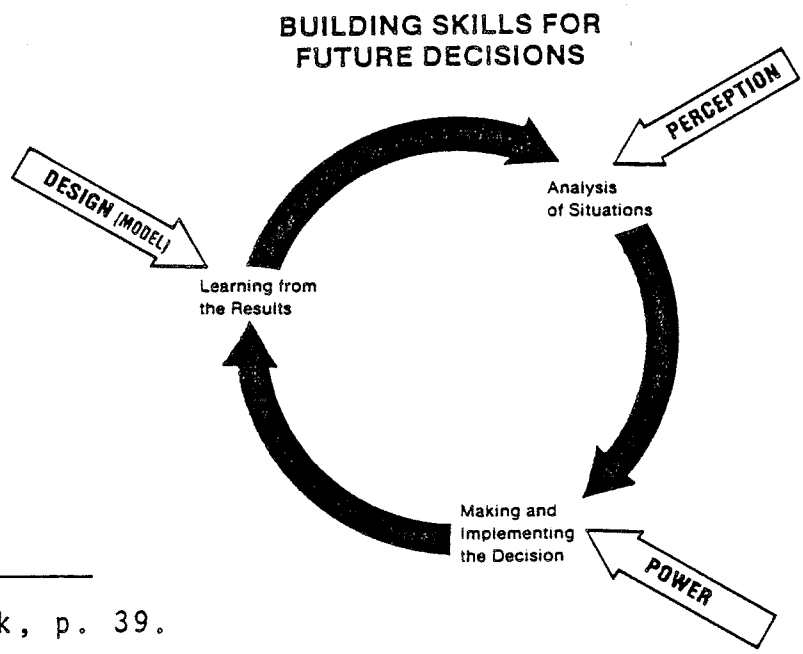
The decision process includes the following steps:

1. Analysis of the situation - Scanning the environment with the aim of recognizing and conceptualizing the decision problem, using both past experience and presently available information.

2. Making and implementing the decision.

3. Learning from the results of the decision how it should be modified and adding this knowledge to the reservoir of experience on which future decisions may draw.[42]

The following illustration depicts this experience combining Bonczek's decision aspects with Felsen's decision process.



41 Bonczek, p. 39.

42 Jerry Felsen, Decision Making Under Uncertainty. An Artificial Intelligence Approach (New York: CDS Publishing, 1976), p. 2.

The CTDD should follow this philosophy of decision making. Following this chart should implant an upward spiral in the process. More effective decisions should result. It can, in fact, be a model for development philosophy on modeling.

Peter Drucker has been quoted to say that "models are blackboard examples of a nonreal world." This may be true but without conceptual road maps learning is almost impossible.

One writer suggests that models are essential in decision making. He suggests a mathematical model with names factors:

> When applying formal techniques to decision problems, alternatives should be compared and ordered by means of a decision making model that permits estimates to be made and preferences to be revealed among them. Thus,construction and use of a model become part of the decision process.
>
> Multicriterion Decision Making Models
>
> (t, S, K, X, f, G, r)
> t = statement of problem
> S = set of feasible alternatives
> K = set of criteria
> X = the estimating scales
> f = a mapping of feasible alternatives for set of vector involved estimates
> G = the decision makers reference system
> r = the decision rule[43]

The problem with this model is the "G" factor. The reference system can stem from a wide range of criteria rendering the entire model useless.

Models bring to light the reality of the problem and provide access to solutions. It is the overreliance

---

43 David Bell, Conflicting Objectives in Decisions (London: John Wiley and Sons, 1977), p. 247.

on models and their blackboard use that trouble begins. Even classical theoreticians like Von Clauswitz remind us to avoid overindulging in models:

> Given the nature of the subject warning design, we must remind ourselves that it is simply not possible to construct a model for the art of war that can serve as a scaffolding on which the commander can rely for support at any time.
>
> Whenever he has to fall back on his innate talent he will find himself outside the model and in conflict with it; no matter how versatile the commander, the situation will always lead to the consequences we have already alluded to: talent and genius operate outside the rules and theory conflicts with practice.[44]

Others remind us that decisions which lack moral values are inadequately represented by models:

> Decisions do, and should depend on values and probabilities, both subjective quantities. Public decisions even more than other kinds also should depend on values and probabilities. These qualities should be public not only in the sense of being publishable but also in the sense that the values and perhaps the probability that lie beyond the decision should depend on some sort of social consensus or at least on some kind of aggregation of individual views rather than on any single individual's views.[45]

Moral forces are difficult to implant into models because they are perceived from within.

---

44 Carl Von Clauswitz, On War Princeton, NJ: Princeton University Press, 1976), p. 141.

45 Bell, p. 247.

> Military activity in never directed against a material force alone; it is always aimed simultaneously at the moral forces which give it life, and the two cannot be separated but moral values can only be perceived by the inner eye, which differs in each person and is often different in the same person at different times.
>
> Since danger is the common element in which everything moves in war, courage, the sense of one's own strength is the principal factor that influences judgment. It is the lens, so to speak through which impressions pass to the brain.[46]

From the classical to the contemporary comes the admonition that with the speed of technology we can quickly separate ourselves from reality and make wrong conclusions. Moving to the 21st Century we may in fact be on very thin ice if we overindulge on the advancing information glut.

> Most of the logical pitfalls of modeling are much older than computers but computers enable us to misuse models at superhuman speed and to produce enormous volumes of invalid output.[47]

#1 - Philosophy of Gaming and Simulating

The CTTD should focus on gaming and simulating which takes from the classical and adapts to the new. A naval academy writer proposes that a war game is "a simulation in accordance with predetermined rules, data, and procedures of selected aspects of a conflict situation."[48]

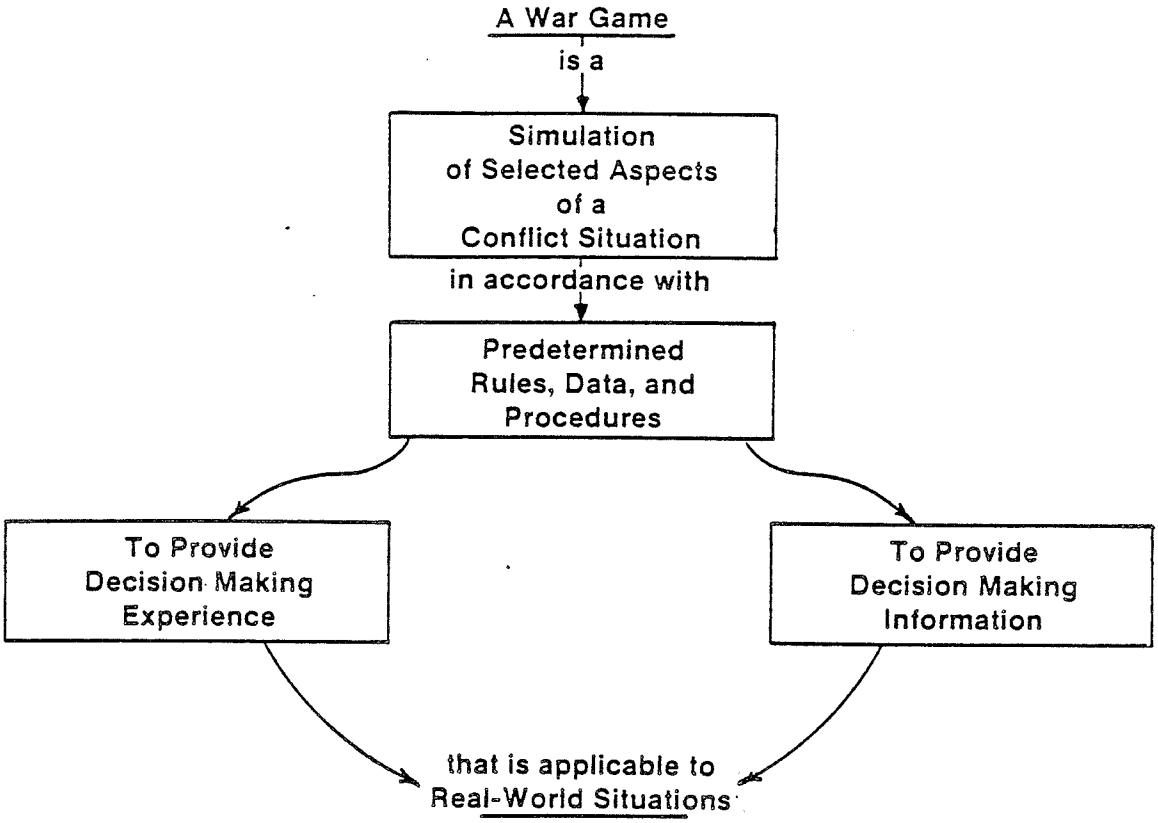
---

46 Von Clauswitz, p. 139

47 Tom R. Houston, "Why Models Go Wrong," Byte, October 1985, p. 151.

48 Roger A. Garrett and Phillip J. London, Fundamentals of Naval Operations Analysis (Annapolis: United States Institute, p. 1970), p. 4.

He provided the following excellent chart depicting the idea.



The gaming idea is to put the decision maker on the hot seat, let him feel the reality and make mistakes that are helpful to his learning. This philosophy should be the cornerstone of the CTDD system.

Taking the best of the old, and adapting the best of a the new in technological advances will produce the highest effects.

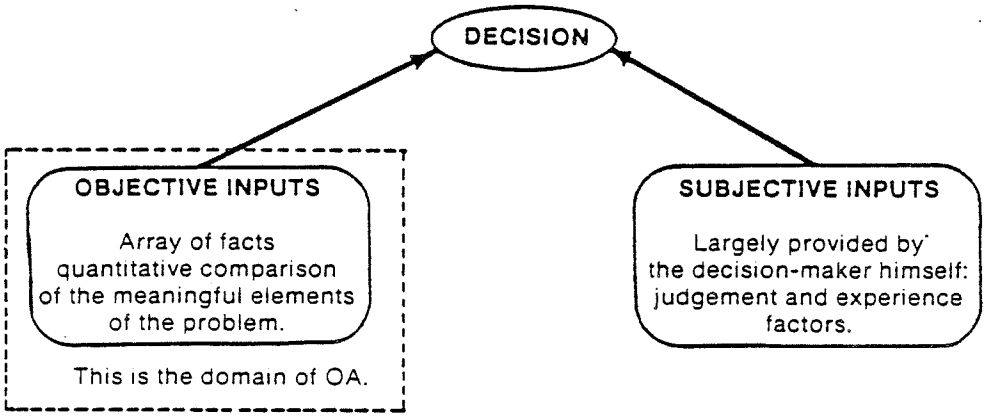
#2 - Philosophy of Technologically Integrated Development

The classical part of simulating decision experiences is established in literature going back centuries in history. The new is yet to be written but the CTDD system should incorporate every avenue of access to be ready for it: One area of readiness is movement by technology into the subjective portion of decision making.

A military writer describes the function of Operation Analysis (OA) as follows:

> ...the function of OA is not to present ready-made decisions to the military commander or civilian executive. Rather, the proper function of OA rests in laying out for the decision-maker the essential factors of the real problem, in proper relationship and expressed in terms of a meaningful common reference--the objective aspects of the problem situation. It remains the prerogative--and responsibility--of the military commander, to integrate these objective considerations with the qualitative and intangible factors in the problem according to the dictates of his experience and professional judgment in arriving at a final decision.

He concludes that objective inputs are measurable and thereby capable of analysis and simulation. Therefore, he says, only the objective inputs into the decision come under the world of OA. Subjective inputs are outside and therefore may not be considered. He charts this idea in the following fashion.[49]



49 Garrett, p. 5.

The new technology, Artificial Intelligence along with its progeny the Expert System, may not be able to conclusively represent the judgment domain. But it can come close. It will certainly come closer if the fifth generation breaks through.

Therefore, a fully integrated human development system must take into account inductive and deductive processes. It must replicate with all that is available the human dilemma of "What do we do now?"

#3 - CTDD Mission

The mission of the CTDD could be summed up in the following statement:

> It is the mission of the CTDD:
>
> To develop the tactical decision development skills of senior California law enforcement officers by the most effective and efficient methods available.

#4 - CTDD GOAL

The goal of the CTDD should be summed up in the following statement:

> It is the goal of the CTDD:
>
> To reduce the negative effects of man-made and natural disasters on the residents of the State of California.

#5 - CTDD Strategy

It should be the strategy of the CTDD to develop the decision making skills among senior law enforcement officers through the use of the best, most effective and efficient methods supported by the latest technology available.

#6 - CTDD Organization

The CTDD should be organized with the following general areas:

a. Conceptual Group

One segment of the CTDD should be given entirely to conceptual development. This group should be kept distinct from the others. This distinction should be kept in order to keep this group active in research and design functions.

b. Communication Group

This group would be charged with developing doctrine on tactical response and command. They would prepare papers, newsletters, and other publications alerting the field to changes and developments in the field.

c. Technological Group

This group would be charged with discovering the latest in technological developments for use by the Center.

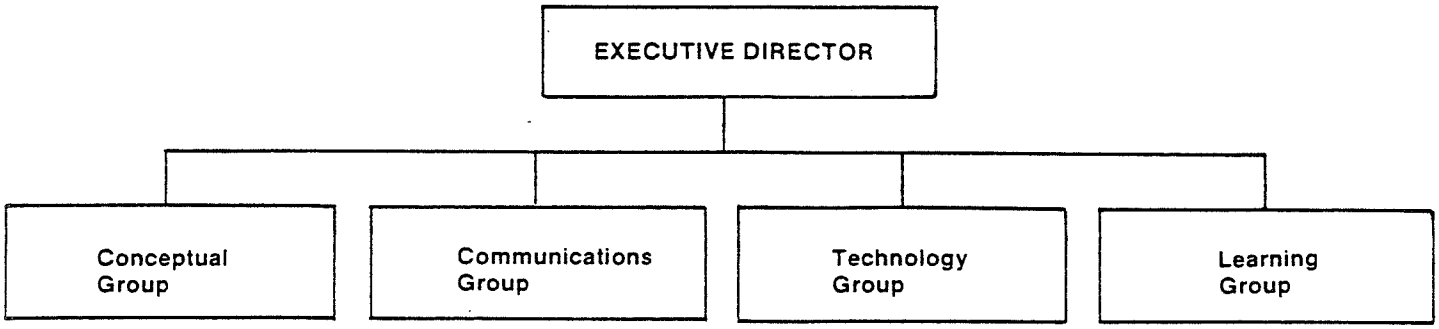
d. Learning Center Group

This group would be charged with the delivery of the development program to the participant.

e. Executive Director

The CTDD Executive Director would provide leadership to the enterprise. He would provide leadership, implement policy, refine methods and coordinate work.

The following chart depicts the organization of the CTDD.



#7 - CTDD System

The system employed by the CTDD should employ every conceivable method of developing the skill in the decision maker. However, those methods which are shown by long range analysis to be most effective should be the ones ultimately merged into the system. The methods which show lesser effect should be dropped.

Research in this project suggests that simulations can provide the best techniques for enhancing the skills of decision making.

Simulations involve all participants, it involves them individually, and it involves them at their own pace. A good well designed simulation can be adaptive to the participant. The intimacy of a the experience internalizes it for the student and learning is enhance.

One military writer commenting on the purpose of simulation put it thus, simulations "make you smarter about your world. It's here to make you learn. You create a situation, try some things, review the results, change a few things and go again."[50]

The Society for Computer Simulation in La Jolla, California produces, conferences seminars and materials for the simulationist. Their information and input would be invaluable to this project. Their representatives were helpful in the preparation of this study.

The following elements should be implanted into the system for best effects.

1. Realism. The system should afford the best form of realistic experience. The "sweaty palms" effect should be a part of it: "Although even minimal cues can convey presence the animistic impact is greatly enhanced by realism. The optimal companion machine would look right, feel right, and sound right."[51] Pressures should be built. News media, elected officials, competing jurisdictional representatives should all be included.

---

50 Otis F. Bryan and Michael C. Natrella, "Testing Large Scale Simulations," Byte, October 1985, p. 183.

51 Frude, p. 132.

2. Expert Systems - Artificial Intelligence

The artificial intelligence technology with its expert system should be deployed to the CTDD. The experts in the field could provide the subjective inductive elements to the scenarios and their simulations. The "knowledge engineers" would do the programming. The mind of the perpetrator should be implanted in the man-made conflict oriented situations.[52]

3. User Friendliness and Intimacy

The simulations should begin by speaking since voice production is the ultimate or near ultimate in user friendliness. The goal should be to develop a personal and ultimate relational approach to a machine in control of vast amounts of knowledge and complexity.

4. Flexibility

The philosophical admonitions of overindulgence in "model thinking" should be included. There should not be one right answer or one only way to solve the problem.

5. Mistakes

Mistakes should be allowed for. "The man who makes no mistakes does not usually make anything."[53] The simulation should allow for a few mistakes along the way, major ones should result in major losses.

6. Time

The simulations should realistically convey time and its effects on indecision.

---

52 Mitroff, p. 49.

53 Delaney, p. 121.

7. Oversight

The CTDD should be guided by a Board of Directors who would be made up from a wide range of interests.

Advice and counsel should be provided by an Advisory Board who would be made up from those with technical and practical knowledge.

8. Management

The CTDD should be run like a business. It's income should be measured against its product. It's productivity should be completely evaluated by practical study.

9. Facility

The CTDD should be housed in a "state of the art" facility with the latest in classroom and research tools. It should maintain a flexibility in order to adapt to future needs. It should be positioned in a central location in California so as to be rapidly available to the greatest number of users.

10. Costs

The Warrior Development Center in Europe is a 15 million dollar project with an annual operating budget of 2 to 3 million dollars. The CTDD should cost considerably less. Firm estimates at this point are useless. The following is a preliminary assessment of the possible line items.

a. Preliminary Costs

* Overall System Research and Design
* Site selection
* Site Purchase
* Architecture
* Engineering
* Construction
* Equipment - software, hardware

b. Operational Costs

* Personnel
* Equipment Maintenance
* System Maintenance
* Facility Maintenance
* Insurance
* Taxes
* Utilities

A careful benefit cost analysis should be designed early. As the cost of technology is decreased in the future additions and adaptations can be made without much increase in operating cost. The costs of personnel will no doubt continue to escalate in the future especially if inflation returns in grand style through the 1990's.

c. Funding

The CTDD should be established as a partnership of funding sources. The following alternatives could be approached:

1. Grants - from foundations
   from public sectors
   from private sector

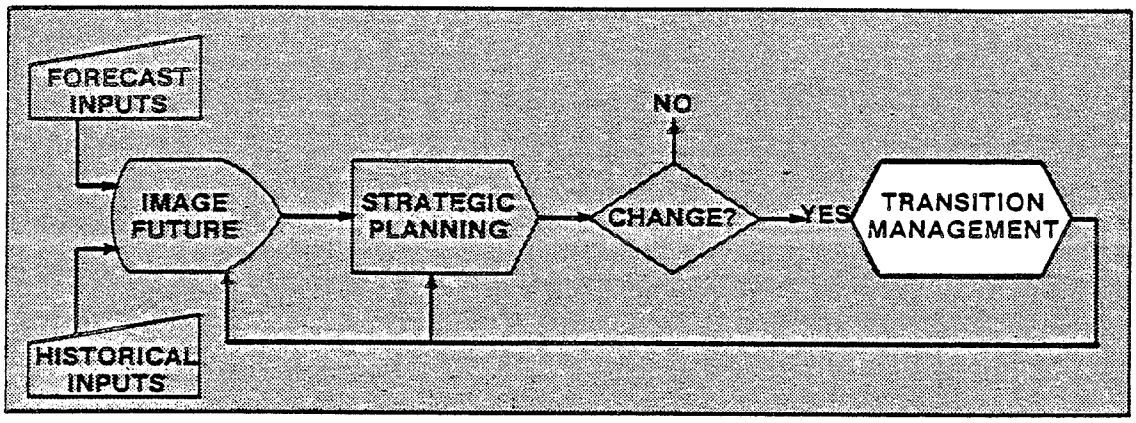
2. Gifts - from corporations
   from individuals

3. Development Fees - from participant agencies

4. Products - publications
   computer programs
   films, etc.

Appeal for funding may be made on the philosophy of direct return on investment in disaster mitigation.

VII. TRANSITION MANAGEMENT



In this section I will outline a plan for implementation. I will analyze the stakeholders involved in the transition and their likely effect. I will identify the "critical mass" of individuals whose position will spell success or failure for the idea. Finally, I will propose action steps for the securing of positive support from the critical mass. This will produce the commitment plan.

VII. Transition Management

A. Stakeholder Identification

In order to determine the relative degree of success potential in this proposal, it is necessary to carefully examine every conceivable element which would have a stake. Thereby, the positive and negative effects can be identified and a plan of action can be developed to work through, around or in spite of stakeholders.

In order to accomplish this task I assembled a group of sharp thinking individuals in my organization. I asked them in brainstorming fashion, to identify the likely stakeholders in this project. By group process, the following stakeholders were identified:

1. Commission on Peace Officer Standards and Training (POST).
2. State Attorney General
3. News media.
4. Harbor authorities.
5. Senior law enforcement officers.
6. Business community.
7. U.S. President
8. Public utilities.
9. Federal Emergency Management Agency (FEMA)
10. Toxic waste management organizations.
11. California Department of Transportation (Cal Trans)
12. State law enforcement.
13. Universities.
14. Chiefs of police and sheriffs.
15. Air Quality Management Districts.
16. State Office of Emergency Services.
17. Public transportation systems.
18. California Highway Patrol (Commissioner)
19. California mayors.
20. California governor.
21. City Emergency Operation Boards.
22. Department of Justice.
23. California Coastal Commission.
24. Military U.S.
25. U.S. State Department.
26. District Attorneys and City Attorneys.
27. F.B.I.
28. U.S. Coast Guard.
29. Terrorists.

30. California Specialized Training Institute.
31. California National Guard.
32. General public officials.
33. Elected officials.
34. ACLU.

Figure VII-1 depicts these stakeholders in expanded fashion.[54]

B. Stakeholder Assumptions

In order to identify the stakeholders who would have considerable impact on the outcome of this proposal the decision continued with the group. In "flip chart fashion" the group identified the stakeholders who would have effect on the basis of:

1. Certainty or uncertainty;
2. Importance or unimportance.

The Mitroff maps of stakeholder assumptions was used in discussion to produce the desired results.

Figure VII-2 depicts stakeholder assumptions with stakeholders depicted by number.

1. Heaviest Stakeholders and Most Certain

The following is a brief assumption analysis in approximate order of both highest certainty and highest importance:

---

54 Mitroff, Corporate Tragedies, p. 85.

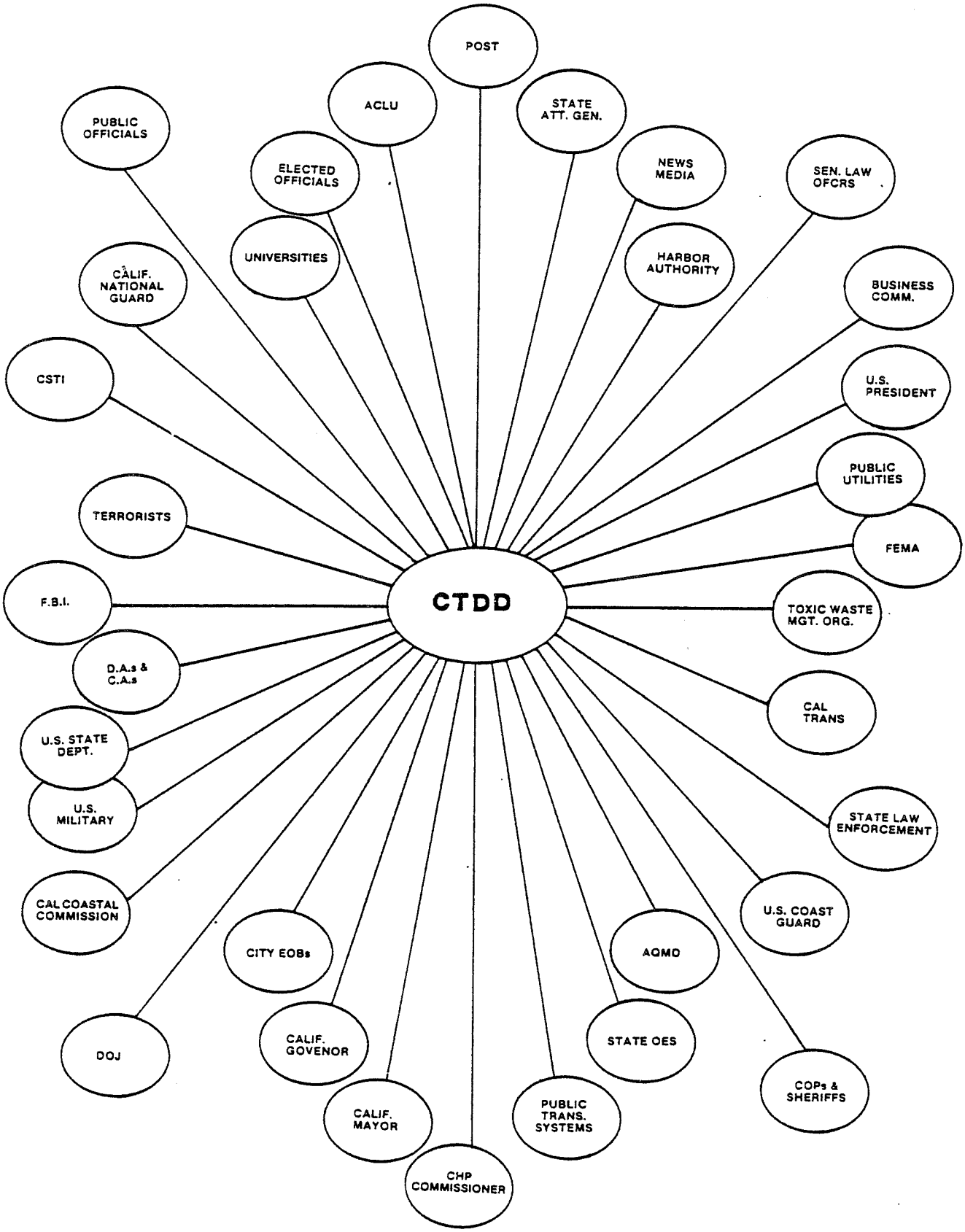

CTDD
POST
STATE ATT. GEN.
NEWS MEDIA
SEN. LAW OFCRS
HARBOR AUTHORITY
BUSINESS COMM.
U.S. PRESIDENT
PUBLIC UTILITIES
FEMA
TOXIC WASTE MGT. ORG.
CAL TRANS
STATE LAW ENFORCEMENT
U.S. COAST GUARD
COPs & SHERIFFS
STATE OES
AQMD
PUBLIC TRANS. SYSTEMS
CHP COMMISSIONER
CALIF. MAYOR
CALIF. GOVENOR
CITY EOBs
DOJ
CAL COASTAL COMMISSION
U.S. MILITARY
U.S. STATE DEPT.
D.A.s & C.A.s
F.B.I.
TERRORISTS
CSTI
CALIF. NATIONAL GUARD
UNIVERSITIES
ELECTED OFFICIALS
PUBLIC OFFICIALS
ACLU

Figure VII-1

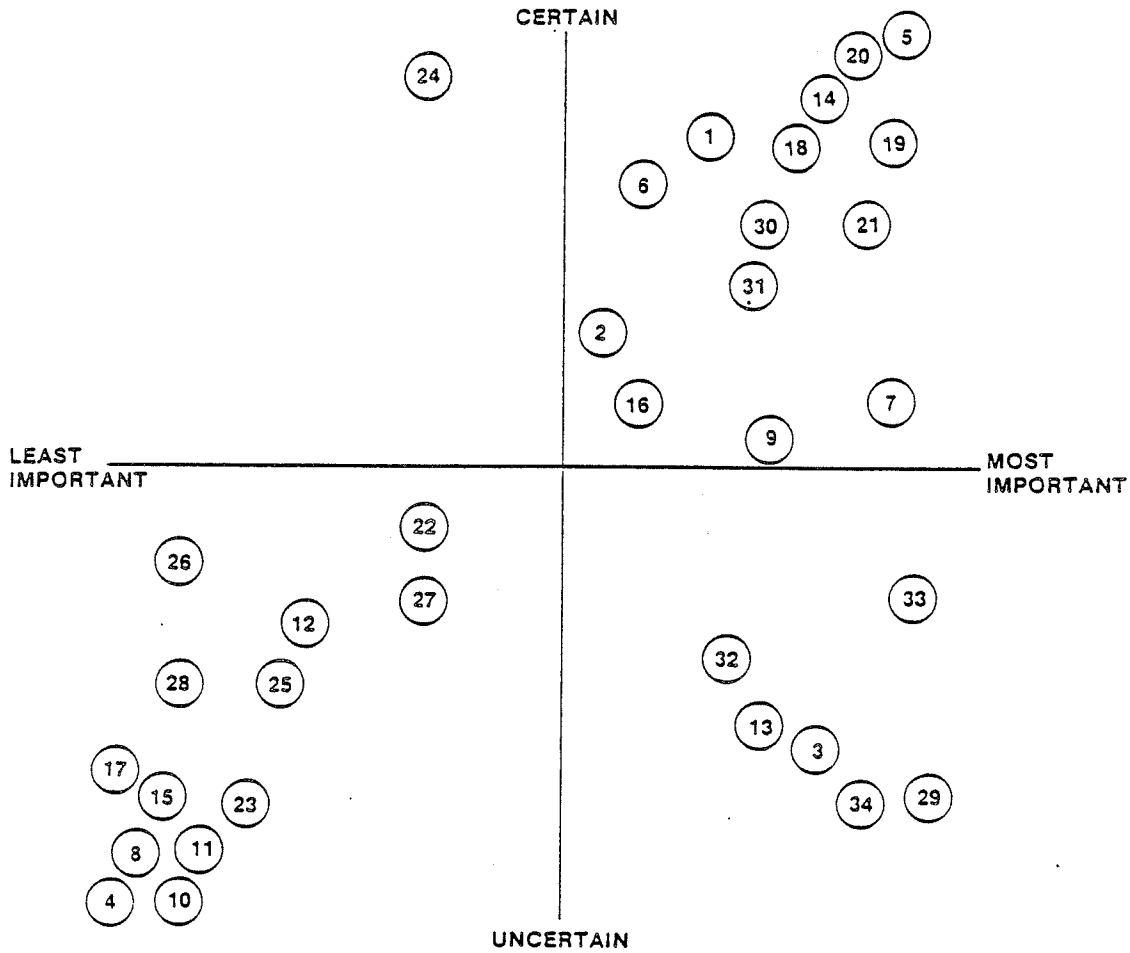

CERTAIN
UNCERTAIN
LEAST IMPORTANT
MOST IMPORTANT
24
5
20
14
1
18
19
6
30
21
31
2
16
7
9
22
26
27
33
12
32
28
25
13
3
17
15
23
34
29
8
11
4
10

Figure VII-2

5. Senior Law Enforcement Officers

These are the potential recipients of the development system. They are most likely to be effected their impact is most important.

20. California Governor

As senior governmental officer in California he is vitally important. His position on such a project is in the high certainty range.

14. Chiefs of Police and Sheriffs

These are people who have much at stake through good or bad decisions of their top subordinates or in many cases their own decisions. Their support is important and could be quite certain.

19. California Mayors

With much at stake politically and personally, mayors would be certain to have strong effects. Their support is essential.

18. California Highway Patrol (Commissioner)

Along with chiefs and sheriffs, this officer has much at stake. His support would be extremely important.

21. Department of Justice

Through its effect Statewide law enforcement the DOJ would be highly important and with its position on matters such as this proposal quite certain.

2. Potential "snaildarter" Analysis

Considering the relative nature of uncertainty stakeholders is a subject of vital importance. Dr. Mitroff refers to this approach as the snaildarter effect.

> The snaildarter is a tiny three-inch fish that held up the completion of a huge hydroelectric dam project in Tennessee for years and at a considerable cost. The designers of the dam, it turned out, had not seriously considered the snaildarters in any of their so-called "rational" plans and cost calculations. The environmentalists pointed out that if the dam were built on the site where it was planned, then it would render the snaildarters extinct. As a result of environmentalists' concerns and lobbying, completion of the dam was halted under the Endangered Species Act until years later when it could be proved that the snaildarters would not be rendered extinct by the project.
>
> The lesson of the snaildarters is a very important one. First, it says that, both figuratively and literally, just beneath the surface of the most rational laid plans of mice and men swim forces of which they are unconscious, and perhaps of which they do not really wish to be conscious. Second, it also says that potentially there are always other stakeholders (in this case, environmentalists) who do wish to be aware of these neglected stakeholders and who will take it upon themselves as part of their self-proclaimed, social obligation to speak for these other stakeholders who cannot speak for themselves.[55]

Although precise identification of "snaildarters" may be difficult, the following stakeholder assumption analysis provides a range of potential. They are listed in their general nature of importance and uncertainty from the map.

---

55 Mitroff, Corporate Tragedies, p. 97.

1. Commission on Peace Officer Standards and Training (POST) - POST is a heavy stakeholder because of its training responsibility and function in the State.

29. Terrorists

Their stake is important and their unpredictability puts them in the top range.

3. News Media

The news media is of considerable importance. They move strongly on public opinion. But their unpredictability is a strong factor.

6. Business Community

Business interests are at stake due to their capital investments, liability exposure and vast potential effects on profits.

7. U.S. President

His knowledge of the program, his California base and his Attorney General with a California base makes him an important Stakeholder.

9. Federal Emergency Management Agency (FEMA)

FEMA's role in emergency management makes them more than casual observers.

13. Universities

The academic community at the university level is of heavy importance. This proposal is a learning proposal. Their degree of certainty is low due to the potential for ideological difference.

16. State Office of Emergency Services (OES)

This agency is highly involved and would be a stakeholder of significant importance.

30. California Specialized Training Institute (CSTI)
The CSTI with its training programs approximating this proposal in a certain fashion would have a strong stake and an important one.

31. California National Guard - Their emergency role in disaster and civil disorder management brings them into the picture as substantial stakeholders.

32. General Public Officials - Heads of state organizations and the state bureaucracy are uncertain in their response. Some of these could be quite uncertain.

33. Elected Officials

    It is interesting that while mayors were identified as having a fairly certain position on the program, elected officials at large were put as potential snaildarters because of their tendency toward unpredictability.

34. ACLU

    Civil libertarians may have a strong level of importance to the program if it is misinterpreted. However, their certainty is open to predictability.

3. Lowest Most Uncertain Stakeholders

Those stakeholders of least importance and uncertainty are not discussed here.

In implementation steps, they should all be considered though. Their degree of importance could shift rapidly. In the group is always the potential for the "snaildarter."

Those considered of least importance and lowest certainty are the following. They are listed here in general degree of greatest importance and highest certainty.

22. Department of Justice (DOJ)

27. FBI

12. State Law Enforcement

28. U.S. Coast Guard

26. District Attorneys and City Attorneys

23. California Coastal Commission

11. Cal Trans

15. Air Quality Management Districts

17. Public Transportation Systems

8. Public Utilities

10. Toxic Waste Management Organizations

4. Harbor Authorities

B. Critical Mass

As defined by Mr. Ruben Harris during a Command College lecture the critical mass is "the number of individuals who, if they support the change, it is fairly assured to happen, and if they don't support the change we are pretty much assured that it will fail."

Stated another way this process is based on the following questions: What is the critical mass necessary to ensure the change? Who in what role locations, must be committed to the change in order for it to be effective?"

The same small brainstorming group was asked to address these questions.

Following a general discussion of all the stakeholders and their relative degrees of importance, the group assembled the following critical mass.

1. Chief of Police, L.A.P.D. - This law enforcement officer has considerable weight in his region and in the State at large. His support for the concept and proposal would have substantial effect.

2. Sheriff, Los Angeles County - This law enforcement officer is both a department head and an elected official of substantial influence. His support would be of major effect.

3. Governor of the State of California - The Governor's impact would be felt throughout the State. He could have a severe dampening effect on the proposal or he could generate support fiscally and politically.

4. California Assembly Speaker - This elected official has strong influence not only on legislative approaches to problem solving but also in conceptual zones. He could do much to block or enhance the success of the programs.

5. Mayor of Los Angeles - As the elected official in the heaviest population center, the mayor of Los Angeles could have heavy impact on the program.

6. Commission on Peace Officer Standards and Training (POST) President - Since the recommended program is a development program, it falls in the domain of POST and its programs. The President of the Commission has considerable influence in moving forward. He could also be a strong restraint.

7. Office of Emergency Services Chief Executive - This State officer has much to do with disaster related issues. Support could be significant.

8. Senior Editor Los Angeles Times - This news official is not alone in influence. He is joined by many others like him. He was singled out because of his considerable influence in the high population center and in the news media community at large.

9. Chief Executive Officers of Major Business Interests - Although no one person could be identified the top officials in this group are the focus of considerable power and undoubtedly could effect to this proposal.

C. Commitment Plan

Having identified the members of the "critical mass" bearing on the success or failure of this proposal, the next step is to design action steps in securing support from them.

Recommended action steps:

I propose that the following steps be taken to move this proposal forward:

1. That the leadership for this proposal be taken by a partnership of individuals representing agencies or organizations reflected in the critical mass.

2. That the critical mass agents be asked to nominate a high placed individual to assume this participative role.

3. That this group be formed into a working group for further steps toward implementation. That this group assume the following charge:

   "This group will work toward the creation of a California Center for Tactical Decision Development. It will resolve issues of organizational design, structure, funding, implementation management and others under general principles of this study."

4. That the coordinatorship for this concept group be assumed by an independent agency, such as a university.

5. That this independent agency be asked to begin under the following general mission.

   a. Raise awareness within the affected sectors of the State of California.

   b. Conduct educational or public communication activities to raise that awareness.

   c. Pursue funding activities simultaneous to the awareness raising activities.

BIBLIOGRAPHY

Books

Application of Logistics and Artificial Intelligence to Reduce Risk and Improve Effectiveness: A Study for the United States Army. Washington, D.C.: National Academy Press, 1983.

Archembeault, William G., and Betty J. Archembeault. Computers in Criminal Justice Administration and Management. Cincinnati: Anderson Publishing Company.

Barr, Avron. Artificial Intelligence: Cognition vs. Computation. Stanford: Stanford University, 1985.

Bell, David E. Conflicting Objectives in Decisions. London: John Wiley and Sons, 1977.

Bonczek, Robert H., et al. Foundations of Decision Support Systems. New York: Academic Press, 1981.

Buchann, Bruce G., and Richard O. Duda. Principles of Rule-Based Expert Systems. Stanford: Stanford University, 1982.

Carter, C. V. ICAP: A Terminal Zone Air Battle Simulation. Santa Monica: Rand Corporation, 1974.

Chaliand, Gerard. Guerrilla Strategies. Berkeley: University of California Press, 1982.

Davis, Paul K., et al. Automated Wargaming as a Technique for Exploring Strategic Command and Control Issues. Santa Monica: Rand Corporation, 1983.

Delaney, William A. The 30 Most Common Problems in Management and How to Solve Them. New York: Amacom, 1982.

Featherstone, Donald. Wargaming. London: David and Charles Publishing, 1975.

Felsen, Jerry. Decision Making Under Uncertainty. An Artificial Intelligence Approach. New York: CDS Publishing, 1976.

Frazer, J. Ronald. Business Decision Simulation. Reston, VA: Reston Publications, 1975.

Frude, Neil. The Intimate Machine. London: Century Publishing, 1983.

Garrett, Roger A., and Phillip J. London. Fundamentals of Naval Operations Analysis. Annapolis: United States Naval Institute, 1970.

Graham, Neill. The Mind Tool. St. Paul: West Publishing Company, 1976.

Horn, Robert E., and Anne Cleaves. The Guide to Simulations/Games for Education and Training. Beverly Hills: Sage Publications, 1980.

Hyde, Margaret O. Computers That Think. Hillside, NJ: Enslow Publishers, 1982.

Klahr, Phillip, et al. TWIRL: Tactical Warfare in the Ross Language. Santa Monica: Rand Corporation, 1984.

McCorduck, Pamela. Machines Who Think. San Francisco: W. H. Freeman and Company, 1979.

Michie, Donald, and Rory Johnston. The Knowledge Machine. New York: William Morrow and Company, Inc., 1985.

Mitroff, Ian I., and Ralph H. Killman. Corporate Tragedies. New York: Praeger Publishers, 1984.

Mitroff, Ian I. Mission Impossible - Teaching Corporate America to Think. Los Angeles: University of Southern California.

Mulsant, Benoit, and David Seruan-Schreiber. Knowledge Engineering: A Daily Activity on a Hospital Ward. Stanford: Stanford University, 1983.

Naisbitt, John. Megatrends. New York: Warner Books, 1982.

Poirot, James L. Computers and Education. Manchaca, TX: Sterling Swift, 1980.

Radford, K. J. Managerial Decision Making. Reston, VA: Prentice Hall, 1975.

Report of the U.N. Disaster Relief Coordinator on the Earthquake in Guatemala. February 1976. Geneva: United Nations, 1976.

Ritchie, David. The Binary Brain. Boston, Toronto: Little Brown and Company, 1984.

Saaty, Thomas L. Decision Making for Leaders. Belmont: Lifetime Learning Publications, 1982.

Shallis, Michael. The Silicon Idol. New York: Schucken Books, 1984.

Solomonn, Susan L. Simulation of Watting Line Systems. Englewood Cliffs, NJ: Prentice Hall, 1983.

Sprague, Ralph H., Jr., and Eric D. Carlson. Building Effective Decision Support Systems. Englewood Cliffs, NJ: Prentice Hall, 1982.

Stahl, Ingoff. Operational Gaming. Oxford: Pergamon Press, 1983.

Steinberg, Ester R. Teaching Computers to Think. Hillsdale, NJ: Lawrence Erlbaum Associates, 1984.

Taylor, Marcia Whicker. A Computer Simulation of Innovative Decision Making in Organizations. Washington, D.C.: University Press, 1978.

Von Clausewitz, Carl. On War. Princeton, NJ: Princeton University Press, 1976.

Weber, Jack. Tomorrow's World Computers. New York: Arco Publishing, 1984.

Weller, Jack M. Organizational Innovations in Anticipation of Crisis. Columbus, OH: Disaster Research Center, 1974.

Periodicals

Bryan, Otis F., and Michael C. Natrella. "Testing Large Scale Simulations." Byte, October 1985, p. 183.

Burke, John T. Col. USA Ret. "The Next Step: Managing Battle With Technology." ARMY The Magazine of Land Power, March 1986, pp. 56-63.

Clifton, Pat O. Col. USAF and Dr. John Romo. "Scientific and Technological Perspectives." Air University Review, July-August 1986, pp. 66-75.

Houston, Tom R. "Why Models go Wrong." Byte, October 1985.

Lindsey, Robert. "1984 World's Fair Under Seige." Law and Order, April 1985, p. 49.

Melman, Yosi and Daniel Ravir, "Terrorists Plan Bloody 1986." Jane's Defense Weekly, February 22, p. 321.

Morrison, R. F., "Disaster Simulation Exercises for Austrailian Non-Government Organizations," Disaster, (September 3, 1985).

Motley, James B. Col. USA Ret. "Terrorist Warfare: A Reassessment." Military Review, June 1985, pp. 45-57.

"Sheriff Found Liable in Police Hostage Training Exercise," Crime Control Digest, (January 20, 1986).

Teston, Major Harvey A. "Command and Confusion at the NTC." Professional Journal of the U.S. Army. U.S. Army Command General Staff College, November 1985, p. 56.

"U.S. Simulated War Game Center Begins Operation," Aviation Week and Space Technology, (September 3, 1984).

Vicker, Earl, "War and Games." Creative Computing, September 1984, p. 146.

Wallace, William A., and Frank De Balogh. "Decision Support Systems for Disaster Management." Public Administration Review.

Professional Journals

"How Can HRD BE More Relevant?" Training and Development Journal. January 1985, p. 17.

"H.R.D. Tomorrow." Training and Development Journal. November 1984, p. 60.

Levivesly, Sally. "The Journal of the International Disaster Institute." Disasters-The International Journal of Disaster Studies & Practice. 6, London, 1982.

Disasters, Disaster Agents and Response. A Bibliography 1982. London: International Disaster Institute, 1982.

Newspapers

"Worst Year Yet For Terrorism." Daily News, (December 28, 1985), Sec. I, p. 9.

Unpublished Materials

"Army Training Battle Simulation System." Link Simulation Systems Division, The Singer Company. Silver Spring, Maryland.

"Tactical Decision-Making Training Survey." United States Marine Corps, Naval Training Equipment Center. Orlando, Florida: September 1984.