

FBI
BULLETIN

NOVEMBER 1982

FBI LAW ENFORCEMENT BULLETIN

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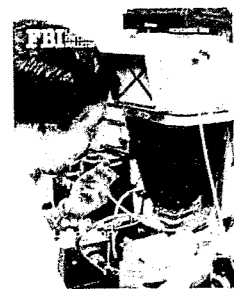
FBI LAW ENFORCEMENT BULLETIN

NOVEMBER 1982, VOLUME 51, NUMBER 11



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The Cover
The FBI Laboratory marks its 50th year of distinguished scientific assistance to law enforcement, as noted in the Director's Message on p. 1.

Federal Bureau of Investigation
United States Department of Justice
Washington, D.C. 20535

William H. Webster, Director

The Attorney General has determined that the publication of this periodical is necessary in the transaction of the public business required by law of the Department of Justice. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through February 21, 1983.

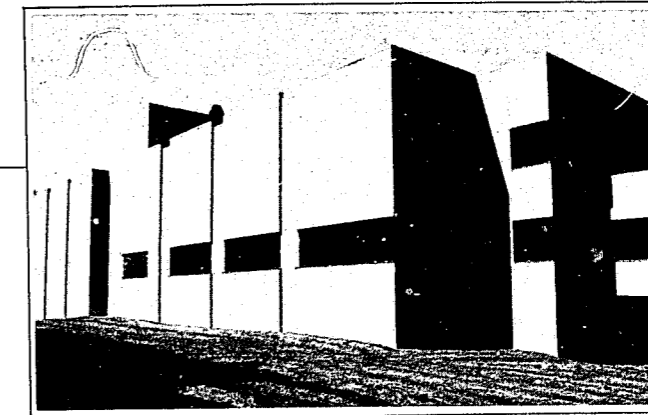
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Director's Message

In 1932, 50 years ago this month, the FBI Laboratory was established with one examiner and one microscope. Today, the Laboratory has grown to 119 Special Agents, 309 support personnel, and an equipment inventory of \$12.5 million. From a beginning of 963 forensic science examinations in 1934 (the first year statistics were maintained), the Laboratory conducted more than 51,000 examinations in 1942, and has about doubled this number every decade, reaching more than 910,000 examinations the past fiscal year.

FBI Laboratory services, including both examinations and testimony in support of the findings, are available without cost to Federal agencies and military tribunals in criminal and civil matters and to all State, county, and municipal law enforcement agencies in this country in connection with criminal cases.

As the value of forensic science became apparent to the law enforcement community, larger police departments established local crime laboratories. The number of these laboratories was rapidly expanded in the past decade and a half as a result of funding provided by the "Omnibus Crime Control and Safe Streets Act of 1968." Then, in 1973, individual State and local crime laboratory directors requested the FBI to take a more direct and active role in the areas of training and research. In 1974, the FBI began offering specialized scientific courses for State and local crime laboratory personnel at the FBI Academy. In fiscal 1981, more than 1,300 personnel were thus trained.

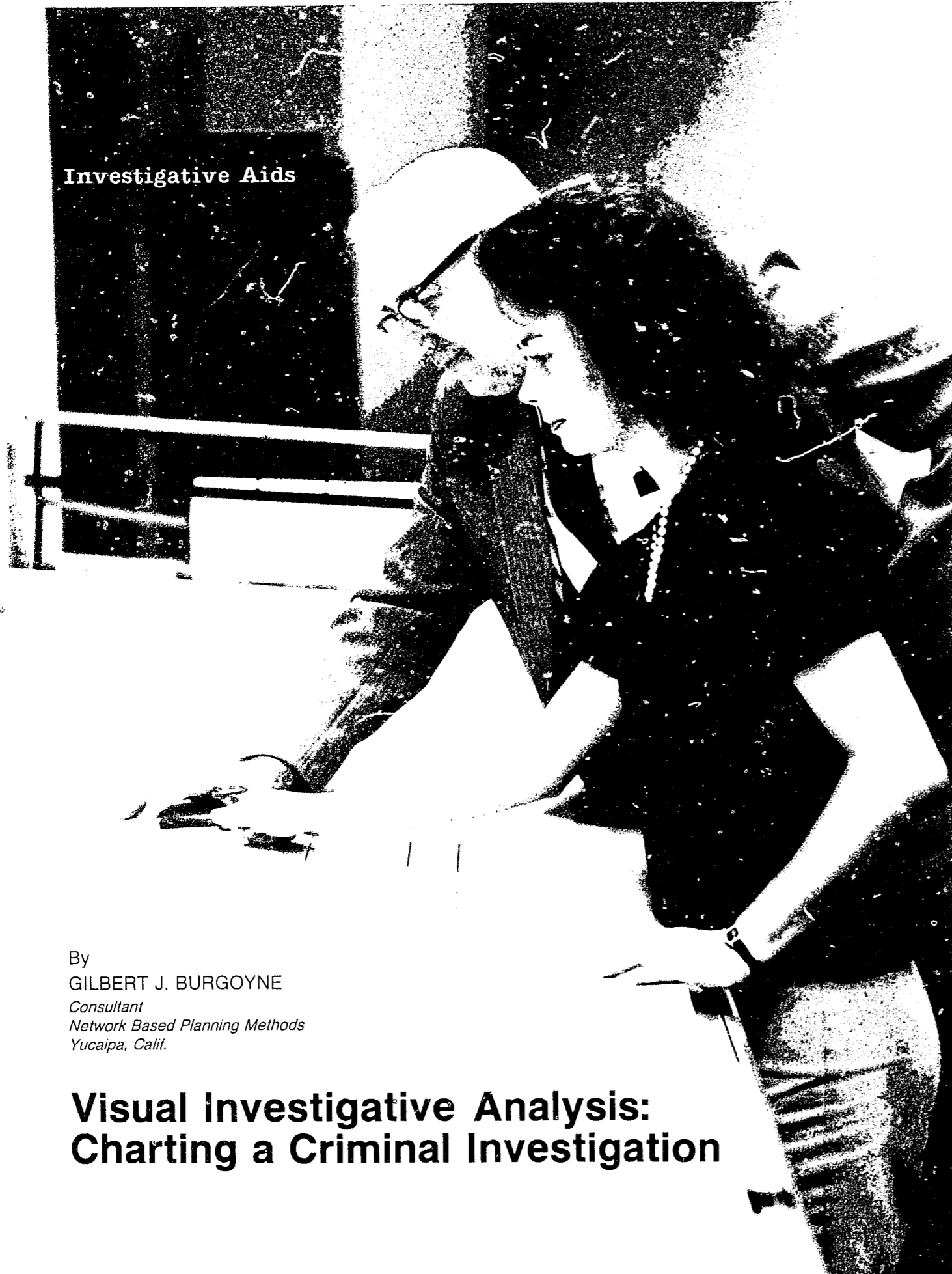
The need for forensic science research was recognized by the American Society of Crime Laboratory Directors in their recommendation for a laboratory building at the FBI Academy for this purpose. In June 1981, this building was dedicated, with 7,000 square feet of its space devoted to research facilities used by a permanent FBI Laboratory research staff, research personnel representing academic institutions, and others from specialized areas of forensic science. The Forensic Science Research and Training Center has as research goals: (1) To develop new and reliable methods in forensic science, (2) to develop new methods to overcome problems in forensic science, and (3) to apply current technology to forensic science. This training and research, given proper funding and support, can assist the Nation's criminal justice system by improving the competency of crime laboratory personnel and reducing State and local law enforcement reliance on Federal laboratories for routine case examinations.

From a beginning devoted to proving the worth of forensic science analysis to both the public and the police profession, the FBI Laboratory has moved on to research and training. This has been a vindication of both the worth of forensic science and our system of service to local government.

These achievements make our anniversary an occasion for translating pride into rededication.

William H. Webster
Director
November 1, 1982

Investigative Aids



By
GILBERT J. BURGOYNE
*Consultant
Network Based Planning Methods
Yucaipa, Calif.*

Visual Investigative Analysis: Charting a Criminal Investigation



Mr. Burgoyne

Police management techniques and practices have undergone many changes in the past 2 decades, and inevitably, these changes will continue and perhaps even accelerate. It is no longer enough that the police administrator depend on available manpower as the answer to the many problems facing him.

The accelerating complexities of law enforcement demand new dimensions in modern police administration. Perhaps the most profound and promising of these dimensions is the use of more advanced systems in the administration of justice. One of these systems which has slowly emerged and which has shown considerable promise is a charting technique known as visual investigative analysis (VIA).

VIA had its inception in 1968 when the assassination of Senator Robert F. Kennedy provided the impetus for the most extensive investigation in the history of the Los Angeles Police Department. The magnitude of the investigation made it necessary to establish a method of planning, controlling, and monitoring the activities of the special task force of investigators assigned to the case. The department turned to a relatively new technique, PERT, which had been used previously in aerospace, mining, and construction projects with notable success. However, this was the first time PERT was applied in a criminal investigation.

Inevitably the question is raised: "What is 'PERT?'" PERT, together with its companion technique CPM, is a management planning, scheduling, and analysis tool which makes use of a graphic display, called a network, to depict the various tasks or activities necessary to complete a project.

PERT is an acronym derived from the words, Program Evaluation and Review Technique, which had its inception in 1957 when the U.S. Navy Special Projects Office was engaged in the development of the Polaris missile. This vastly complicated project was being conducted at or beyond the state of the art in hundreds of plants throughout the country, and the Navy was faced with the job of coordinating the work of some 3,000 contractors, suppliers, and Government agencies involved in design development, and fabrication. As a means to control and monitor this complex and far-flung program, a research team was established in conjunction with the naval special projects office, the prime contractor, and the management consulting firm. The result was a new system, PERT, which was credited by the Navy with advancing the successful completion of the Polaris missile program by more than 2 years. Since then, it has become an important managerial tool used extensively in Government projects and in private industry.

CPM (critical path method) had its inception about the same time as PERT, and while not identical, they are closely related. The genesis of CPM took place in 1957 when a major U.S. industrial firm, having become dissatisfied with the 50-year-old standard use of bar charts and bar graphs to evaluate construction schedules and progress, decided to seek a new method to plan and schedule their many projects.

**"The general concept of provide
an innovative scientific method for
planning, coordinating, and controlling
criminal investigations."**

A special team was assigned to explore alternatives to the traditional procedures. The approach was surprisingly simple—devise a master plan by applying logic and mathematics and then translate the plan into a management working schedule. Thus, the critical path method was conceived.

It is not the intent of this article to provide for the mechanics and intricacies of networking; it will suffice to state briefly that PERT/CPM is a set of principles, methods, and techniques for effective planning of objective-oriented work, thereby establishing a sound basis for planning, scheduling, and controlling programs.

When PERT/CPM was first applied in its original form to the Sirhan investigation, it was quickly determined it was not effective as an investigative aid because of its inflexibility. Subtle changes and modifications were made, and visual investigative analysis became a reality.

The general concept of VIA is to provide an innovative scientific method for planning, coordinating, and controlling criminal investigations. The basic element and salient feature of VIA is the network or chart. The completed chart enables an administrator, at a glance, to monitor the progress of an investigation, to identify and locate readily those reports dealing with a specific activity, to discover weaknesses and omissions in the investigation, and to deploy available resources to greatest advantage.



One of the outstanding features of the VIA technique is the ability to portray graphically the significant issues of a case. The relevance and meaningfulness of specific items of evidence can be brought out in full light of their significance to the overall investigation. Traditional problem areas, such as maintaining the chain of continuity of evidence, conducting indepth interrogations of suspects and witnesses, allocating available investigative resources, preventing the omission of pertinent facts, and preparing timely and complete reports, could be more easily resolved or overcome through use of the VIA charting technique.

During a complex investigation where traditional methods are used, an investigator may not be aware at all times of the true significance of witnesses' statements or other points of information at the time they are ob-

tained. He may also obtain fragmented points of information without being aware that he should have explored the area in more depth. With a properly constructed network at his disposal, which will show the relativity and interdependencies of the important issues of the case, the investigator will obtain a visual perspective of the investigation, enhancing the objectivity in pursuing the investigation.

The VIA charting technique is not a panacea; it is only another tool at the disposal of the investigator. It will not "solve" cases. It will not necessarily make the investigations easier. Many times, questions to be resolved can be explicitly brought out on the chart, requiring the investigator to "dig" for an-

swers. Oftentimes, the network will show inconsistencies in witnesses' statements or other conflicting data which may obscure some of the important issues.

When properly applied and analyzed, VIA will provide the investigator with information on which to base decisions and will present a clearly perceptible picture of the entire investigation for review by all those concerned with the administration of the investigation. The case supervisor will find the network to be an excellent means for reviewing the progress of an investigation. Much of his time spent reading reports would be considerably reduced, if not entirely eliminated. Perusal of a network that is continually updated with new information will enable him to obtain the same "visual perspective" as the investigator, and he will be better able to monitor the investigation.

The value of networking as a tool for the investigator has been stressed, but its potential as a tool for the prosecutor should not be overlooked. Many times, a complicated case, once it is presented in court, can become a real puzzle to the jury which can, in turn, unduly prolong the trial, and to say the least, delay the verdict. A pictorial presentation enables the jurors to put together the pieces of the puzzle and thus gain a clearer and uncluttered picture of the entire case.

How effective is VIA? In 1975, a questionnaire was submitted to law enforcement agencies in California which had used the VIA technique on major criminal investigations. It was believed that the collection of subjective data in the form of opinions and observations of informed persons who had the opportunity to observe and use the technique would provide a valid premise on which to establish the value or effec-

tiveness of the VIA technique. The results of this query indicated wholehearted approval of VIA. An assistant U.S. attorney in California stated, "I have found the support and materials received from VIA to be invaluable in the preparation and presentation of the case. In my opinion, the charts and graphic analysis have been invaluable prosecutorial tools, both in and out of court." A detective commander of a major police department stated, "From an administrative point of view, it provided a rapid review of the crime and areas needing additional investigation."

However, evaluating the effectiveness and determining the feasibility of innovative methods of doing things are never easy tasks. The chore becomes exceedingly difficult when the program being evaluated does not easily lend itself to the scientific method of inquiry. The visual investigative analysis technique is within the category of programs that is most difficult to examine scientifically.

The numerous, complex variable factors involved in networking investigations make any attempt to develop scientific generalizations extremely difficult. Every crime, and every investigation that follows a crime, is unique; as such, each case requires a unique approach. The VIA method of managing investigations is designed to accommodate the most complex and peculiar requirements of any investigation.

Since the VIA technique is merely one of the many investigative tools that can be used in conducting investigations, it is difficult to isolate and analyze the results of the VIA technique. The effectiveness of investigations is traditionally measured quantitatively in terms of the number of crime clearances, arrests, and convictions. However, this does not seem to be a valid method for determining the effectiveness of investigative techniques used during the investigation. It is entirely likely that even though a case remains unsolved, the techniques used for conducting the investigation were successful and efficient. The successful or unsuccessful outcome of an investigation, therefore, does not singly appear to be a valid measure of the effectiveness of the VIA technique.

Therefore, to prepare valid and meaningful recommendations, an indepth analysis and evaluation of this technique as applied to criminal investigations are essential, taking into consideration all of the variables, including the human factor. The technique is logical and based on commonsense. People sometimes are not. It is not, therefore, surprising that "people problems" are the most difficult obstacles to successful application of VIA to criminal investigations.

The initial reaction to the VIA technique by investigators was significant. The responses varied from top management to the field investigator, and a natural desire to maintain the status quo manifested itself throughout. All agreed that good planning is a project requirement and particularly needed in the field of law enforcement. Some said that networking is the greatest

"One of the outstanding features of the VIA technique is the ability to portray graphically the significant issues of a case."

breakthrough in the investigation of crimes in 50 years; others believed that networking is fine for someone else, but not for them—a "gimmick," no less. It is worthy to note that those investigators who had been exposed to VIA, either by working with technicians on actual cases or in class, applauded the technique as a definite asset to the investigator. It is expected that as VIA matures and its use expands, it will include elements of link analysis and psycholinguistic analysis to enhance its value to the investigator.

Perhaps a word of caution would be appropriate at this point. The VIA method is a logical refinement and modification of established and proven methods of planning and control techniques. In theory, it is deceptively simple, and the potential appears unlimited. Experience, however, has shown some limitations, particularly in an extensive investigation. These limitations are made manifest if technicians are not carefully selected, the training process is inadequate, the technicians have little or no knowledge of criminal investigative procedures, or when too much is expected of the technique. Once again, it must be stressed: VIA does not solve crimes; investigators solve crimes.

To illustrate the impact networking has had on criminal investigations, it seems relevant to report that an article entitled "Possibilities of PERT Planning in Criminal Investigations" was published in a Russian-language journal. The article, which has been translated into English, points out the value of networking in the administration of a complex criminal investigation. The author states:

"From the point of view of organization of time and reducing investigation time, the application of PERT techniques when planning and

organizing the investigation of complex multi-episodal affairs—affairs the investigation of which, in PERT language, requires coordination of action among many 'co-executives' and includes hundreds and thousands of events and operations—can turn out to give the best results."¹

While networking is an invaluable tool for the investigator, it can also assist the police administrator in other areas. The general benefits experienced by users of network planning and control include significant improvement in project planning, management control, progress reporting, identification of problem areas, communication, decisionmaking, and timesaving. All of these are translated into cost savings and more efficient management resources.

How does this fairly simple, almost obvious technique actually enable the user to gain the stated benefits? The answer is systematic, logical discipline. Obviously, the results are only as good as the effort put into the plan. By using network planning, one is subjected to a rigorous discipline which shows up illogical plans. It displays the entire project in fairly great detail from beginning to end. This alone will induce positive action. Otherwise, it is easier to put off tough choices or overlook dependencies that create conflict or dilemmas which require an immediate decision. Another reason this technique helps the manager is that a pictorial view of the interactions between activities allows him to envision a better way of doing things.

In 1975, the FBI, knowing that VIA was being used in California with notable success, decided to apply this relatively new technique to an ongoing nationwide extortion investigation. The writer was requested to prepare a VIA network on this far-flung and complex investigation, and through the use of the network, plus diligent efforts by Special Agents, a suspect was developed and indicted.

Again in 1977, the Bureau used the VIA technique on a kidnaping and murder investigation. The success achieved in these investigations resulted in the establishment of a VIA unit at FBI Headquarters. The initial staff was trained by the writer. Because of the impact VIA has had on the investigation and prosecution of major cases during the past 5 years, the VIA personnel complement at FBI Headquarters has increased from two to eight analysts. The new members of the VIA staff are now trained in the VIA technique by a training program developed by an FBI staff analyst through the expert direction of the writer. Subsequent to and/or concurrent with the VIA classroom training, the analysts are trained in FBI investigative operations and procedures and are closely monitored for a period of 1 year as they apply the knowledge they have acquired. During their tenure with the VIA group, and as experience dictates, the analysts are assigned progressively more difficult cases.

VIA as an investigative and prosecutive aid has been applied to approximately 85 of the FBI's most complex investigations centering on terrorism, organized crime, white-collar crime, and personal and property crimes. In most instances, these investigations

were multifaceted and involved massive amounts of information. The relationships among the various activities and individuals involved in the perpetration of the crimes and the subsequent investigation would have been extremely difficult to perceive without application of the VIA technique. VIA provided a "map" evincing relevant information and/or a lack thereof, enabling a more thorough investigation and interpretation of information—the major goals of all law enforcement agencies. One assistant U.S. attorney provided the following comment concerning VIA's effectiveness.

"Concerning the conduct of the investigation and its administration from a legal standpoint, the VIA networking was absolutely essential in this investigation. In terms of preparing the case—it is absolutely invaluable. You can check to see if all your evidence is covered.

"The VIA networks highlighted areas that were incomplete and enabled investigators to zero in on them. We had to account for the subjects' activities on a minute-by-minute/hour-by-hour basis. If you can do that, which was essentially done in this case, it serves as an excel-

lent aid to investigators and prosecutors during the interview of subjects and/or during discussions with defense counsels. We told the subjects we had evidence, but more importantly, we showed them we had the evidence—it then convinced them to talk."

In view of the apparent potential of VIA as an aid to law enforcement, one might ask, "Why is it not in greater use?" First, it must be stated that although VIA was introduced in 1968, it is still relatively unknown, even though VIA seminars have been conducted in many cities throughout the country during the past 14 years. Second, establishing a VIA unit and training personnel requires funding. In this day of curtailed budgets, it is difficult for the police administrator to convince the guardians of the budget that VIA is a valid and needed support. Also, there is skepticism. There are still those who say, "It's a 'gimmick,' it will never work."

Although the propitious initial application of VIA created considerable interest within the profession, the machinery of law enforcement sometimes seems to perpetuate the status quo. Change is gradual; progress seems imperceptible. But as a former chief of the Los Angeles Police Department stated: "The application of these methods will probably soon become routine in complex criminal investigations."

FBI

Footnote

A. P. Syrov, "Possibilities of PERT Planning in Criminal Investigations," *Pravovaya Kibernetika*, 1970.



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