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RIOT PREVENTION AND CONTROL:
OPERATIONS RESEARCH RESPONSE

By

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April 8, 1968

SYSTEM

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Paper and commentary presented by
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Symposium on Law Enforcement Science and
Technology, conducted by the Law Enforcement
Science Technology Center, IIT Research
Institute, on April 17, 1968.



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ABSTRACT

In terms of alternative strategies, tactics, states of nature, utility measures, and criteria of operational effectiveness there are considerable differences between pursuing the objectives of: (1) simply maintaining public order; (2) maintaining public order within the constraints of a free society; and, (3) improving systems for the "administration of justice."

There is a real urgency implicit in the need for developing new concepts and acquiring new knowledge, techniques and tools essential to an understanding of the problems associated with civil disorder. Of equal importance, there is an urgent need for translating the new concepts, technologies and resources into viable institutions and programs that may bear little resemblance to "traditional" patterns of action.

Operations research offers an array of techniques that may be of considerable value in examining the probable consequences attendant upon breaking with traditional approaches to what appears to be a complex interrelationship of intransigent problems.

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ACKNOWLEDGMENT

In presenting this paper, the author acknowledges the many valuable insights into inquiries of a strategic nature provided by Robert C. Richardson, III, Associate, B. A. Schriever Associates, Inc. These insights were provided during and subsequent to the time when General Richardson was DCS for Science and Technology, Headquarters, Air Force Systems Command, United States Air Force.

This paper, as indicated on the program, is supposed to deal with the subject of riot prevention and control. It is also supposed to deal with this subject within the frame of reference implied by what has been referred to as an "Operations Research Response." I have had some first-hand experience with both types of activities. As one result I have reached an obvious, but perhaps none-too-original conclusion: both riots and operations research are fairly complicated subjects. Hence, I'm not at all sure that anything more than a cursory treatment of either subject can, or should, be attempted in the time allotted. Another reason for my reservations is that I do not propose to address the issue along what some would refer to as a traditional vein. Without in any way wishing to imply criticism of the views held by any of the other speakers at this symposium, those of you in the audience, or the literally thousands of views on the subject held by the general public, there is at least one factor in my favor. Opinions and views, at least on the subject of riot prevention and control, are somewhat like sex--everybody seems to have at least one.

I do not believe that those of you here today are going to come away from at least my part of this program with any recommended panaceas, much less any specific diagnosis. Hopefully, however, we may be able to explore at least one way of examining the problem which has brought us together here today.

First, and perhaps foremost, let us get one thing settled. Operations research is not, despite the implied assertions of some of the less reputable practitioners of the black art, any sort of modern day version of the legendary

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magic wand. Operations research, like the sciences upon which it draws, can do much in telling us how man and other things in our world do, in fact, behave. However, when one encounters the questions associated with how man and other things in our world ought to behave, the responsibility for decision is essentially on the shoulders--or more precisely, in the minds--of man. Operations research can, and frequently does, assist and complement the man in making these decisions. It does not--nor can it--make his decisions for him.

With the foregoing as a sort of preamble--a term which seems to have infinitely more class than "introduction"--let us now begin circling the problem much as the Indians of old might have circled the settlers and their wagon trains. Whether this exercise was calculated to intimidate the pioneers, test their strength of purpose, size up their defenses, or merely exercise the Indians, I'm not quite sure, but it did at least provide an opportunity for looking at a strange looking, but tempting, target from a variety of angles.

The ample documentation available, both classified and unclassified, as well as my own observations and experiences, indicate clearly to me that much of the world--including the United States--is in the throes of significant, uneven, and unfortunately all too frequently unanticipated social, political, economic and technological change. One of the more obvious consequences of this era of accelerating change is a total environment wherein there exists an imperative need for an effective and equitable ordering of human affairs. In

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addition, there is a clear need (of corresponding importance) for the development, conservation, and management of resources on a scale never before undertaken. There is also a need to develop capabilities with which to assist us in the management of change. These felt needs have resulted in a growing recognition of the existence of problems--both national and international--of a complexity and magnitude without precedent. By way of an initial caveat, I would like to add to the foregoing the remarks--taken completely out of context, I might add--of a man for whom I personally have a great deal of respect. Professor Henry A. Kissinger, writing about a somewhat different subject than the one that occupies our attention today, stated:

The patterns of action of a secure past no longer work. . .
The issues which have gone unresolved. . .no longer permit
delay. At every turn America confronts directly and urgently
the necessity for choice [1].

It is precisely with reference to this point, ladies and gentlemen--the necessity for choice--that I feel OR can make its most valuable contribution

One subset of this total set of problems that appears to be of increasing importance is related to the task of identifying, averting, reducing, and/or resolving specific conflict situations. Conflict situations, of the type to which reference is made here, must be viewed as those arising from within separate--although frequently overlapping--areas of confrontation other than just those normally associated with the more or less traditionally viewed continuum of overt military or paramilitary conflict. Riots embody some of the characteristics of lower levels of conflict, i.e., insurrections and

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insurgencies. They are not, however, identical. We have no sure-fire formula for preventing or controlling insurgencies. We obviously have no neat equations for preventing or controlling riots. Our most apparent response has been attempts at suppression through increasingly heavier commitments of military, paramilitary and police forces. I submit that this has been largely due to an inability--perhaps an unwillingness as well--to anticipate and avert the overt conflict at this level by other means. This is not a concern that is wholly new. Quite some time ago, in fact well over a hundred years ago, it was stated:

. . . when war is for the most part carried on by means of a people's war . . . a truly new power is formed and . . . people's warfare introduces a means of defense peculiar to itself [2].

I suspect that with minimal extrapolation the observation has relevancy to riots as well.

By way of a second caveat, I would like to add here that there is no intention on my part to minimize either the necessity for, importance of, or my interest in, developing capabilities with which to cope with these types and forms of conflict. However, the type of conflict situations envisaged here includes, in addition to the military and paramilitary dimensions, the political, social, economic and technological continua of conflict. Not only do these areas overlap, but as relatively recent events--both within and external to the United States--have so amply and devastatingly demonstrated, they frequently tend to

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exhibit a form of metastasis from one continuum to another. A term currently used to refer to this phenomenon is escalation.

There has been of late an increasing amount of attention devoted to the subject of civil disorder in this country. Two of the more recent documents are the Report of the National Advisory Commission on Civil Disorders [3] and the March-April issue of the American Behavioral Scientist, devoted to the subject of "Urban Violence and Disorder" [4]. To these must be added the eminently readable Rivers of Blood, Years of Darkness, written by a member of this panel, Mr. Robert B. Conot [5]. Parenthetically, I would like to add that on the basis of my participation--before acquiring the dubious distinction of a position description of Senior Operations Research Scientist--as a Sector Commander with the Los Angeles Police Department during the Watts Riots of 1965, and the Watts "incident" of 1966, I can personally attest to the validity of the majority of the contents of Mr. Conot's work. It is not that I question the first two. It is just that I was not personally involved. But in August of 1965, in the idiom of the day, "Baby, I was where it was at." That experience, plus a relatively recent on-site involvement in problems related to counter-insurgency in Southeast Asia have provided me with a visceral, if not intellectual, appreciation of some of the inherent problems and apparent inadequacies of stylized responses.

Immediately preceding these writings on civil disorder there was a regeneration of interest in crime and the administration of justice in the United States.

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This renaissance of concern culminated in perhaps the single most comprehensive series of documents to deal with this general subject, i.e., the Report of the President's Commission on Law Enforcement and the Administration of Justice, and the set of supporting Task Force documents [6]. I had the good fortune to be permitted to work with some of those involved primarily in the Police and the Science and Technology portions of the activities.

In addition, there have been many other documents and speeches reflecting an interest in the general areas of law and order, administration of justice, law enforcement, public order, etc. Even some of the academes have taken renewed interest in the subject. I know that many of my colleagues on the faculty of the University of Southern California have a definite interest in the subject. To date, if one were to weigh the outpourings it would seem that the balance would tip in favor of those items dealing with what might be referred to as the "administration of justice."

Having at least attempted to establish some semblance of credibility and at least superficially satisfy a fundamental requirement of academic respectability--vague familiarity with the literature--I would now like to return to a subject that seems to have gotten lost somewhere: operations research as it relates to objectives and strategies relevant to riot prevention and control. I am not yet ready to embark upon a series of speculations relevant to causes of riots. To do so at this juncture might well put me in the position of the learned scholar who studiously observed the relationship between the

phases of the moon and the rise and fall of tides and concluded on the basis of the evidence and extensive statistical analysis that clearly the rise and fall of tides caused the variations in the phases of the moon.

It is suggested that there is a considerable difference between: (1) pursuing the set of objectives relevant simply to the maintenance of public order, and (2) pursuing the set of objectives concerned with maintaining public order within the constraints of a free society. The latter objective, in the parlance of the OR practitioner, is almost a classic example of suboptimization.*

Both of the foregoing objectives, in turn, differ considerably from pursuing the set of objectives which seeks essentially an improvement in the "administration of justice." It is, however, this last set of objectives which presently appears to be enjoying considerable currency. Now, it is not the intent of this paper to either minimize or cast aspersions on the attempts being made to improve the administration of justice. The concept of an equitable system of justice is implicit in our form of government. An improved system for the administration of justice is certainly a worthwhile objective. It is the purpose of this paper, however, to suggest that the ramifications posed by the differences between these sets of objectives in terms of alternative strategies, tactics, states of nature, utility measures, and operations,

*In simple terms, the more public order one achieves, the less "free" the society; the more "free" the society, the less likely is "complete" public order. Somebody has to decide (our old friend, "choice" again) on the balance.

are indeed critical. Further, it is suggested that these differences should be the subject of serious efforts aimed at conceptualization and definition, especially when one is concerned with civil order and/or civil disorder.

One might begin by considering the roles or missions of one subset of government resources--the police. The "traditional" view places the police in a sort of continuum of organizations including the police, prosecution and defense attorneys, a variety of courts, corrections agencies, probation and parole authorities. This view has been explicated in several relatively ancient as well as recent studies, among them the Space General Corporation study of the California Justice System [7]. This is, if for no other reason than its familiarity, a comforting view. However, and here comes the first hint of heresy, it is a view that may be something less than compatible with the real requirements of the problem of public order within the constraints of a free society, especially as this relates to the prevention and control of riots.

One of the more apparent ramifications implicit in this view is that within the presently operative legal constraints, none of the resources of the traditional justice agencies, with the possible exception of some as yet undetermined portion of the police resources, can be expended or allocated on other than a post facto basis. Further, if one is indeed concerned with the objective of acquiring and maintaining a level of environmental stability that is conducive to the achievement of meaningful social and economic progress--in

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short, public order--there seem to be several unvalidated assumptions upon which presumptions are based to the effect that increasing the efficiency of the criminal justice system alone, although in all probability a most worthwhile undertaking, will result in any significant impingement upon such things as reduced crime rates, safe streets, fewer civil disturbances, etc. Some would assert that even the best criminal justice system is a means to an end, not an end into itself.

In my opinion, and I hasten to add that it is only an opinion, it is altogether possible that we have reached a point where we are more preoccupied with the instrumentalities of government than we are with the objectives implicit in our form of government. In a sense then, it is equally possible that we may be applying our much vaunted scientific and technological capabilities to the perpetuation and embellishment of what was once described as a series of monuments to the "triumph of technique over purpose."

One area of concern has to do with what we might call the conceptual bases--some would call them biases--upon which we presumably intend to build systems in the civil sector in general, and in the public order sector specifically. One has only to read contemporary writings on national problems or listen to the views presented to, and by, the legislatures at varying levels of government to realize that there is increasing difference of opinion--if not actual confusion--over the direction we should henceforth give to efforts associated

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specifically with maintaining the internal peace and stability of our society, and coping with the apparently staggering increases in demands in the civil sector generally.

It is clear that the incidence of conflict in the streets is increasing. It is equally clear that there is also a picture of what might be referred to as increasing interdisciplinary conflict evident in the views of scholars relevant to causes and cures as reflected in their writings and speeches. Much of this debate, incidentally, seems to be more notable for its intensity than its accuracy. To this may be added a picture of increasing interagency conflict in both the areas of objectives and the selection and advocacy of methods to be employed in achieving these objectives. Further, there is also an apparent increase in what might be called competition, not only for funds, but for spheres of influence as well. To this situation one might also add the picture of what appears to be uncertainty as to what is actually required in funding and organization to deal effectively with what have come to be recognized as real threats to our society.

In recent years, nearly all long-range plans--associated with program areas in the civil sector, NOT just police planning--such as they are--have been relatively unstable. Federal, state, county, and local goals--to say nothing of private agency objectives--have been approved repeatedly, and yet never achieved. The goals, where they have been set, have invariably been revised downward as target dates approached. The most frequently mentioned reasons

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have had to do with economic factors. It is quite probable that these reasons have been cited because they are, if not real, at least the most apparent.

This suggests that there is something fundamentally wrong with long-range planning, when minimum requirement plans are not fulfilled, even when they are based upon what might loosely be called a "capabilities" approach. There is more than a little reason to believe that there is a triad of factors operative here: (1) reluctance, or inability, to incorporate new concepts into the planning process; (2) failure to take advantage of advanced technology; and, (3) developing and implementing plans on the basis of short-range expectations aimed at the "final" containment or resolution of what are, in essence, dynamic problems.

The foregoing rather negative observations suggest to me then that what we may call "long-range planning" is actually more akin to "expedient efforts aimed at exigent exorcism." As aptly stated some years ago by one of the panelists on the Communications, Command, and Control Session--Mr. Herbert Isaacs--it may also be more akin to a "crisis-to-crisis-unhindered-by-plan" approach to problem-solving.

Of the many problems that face governments in general, and the agencies of government charged with public order and socioeconomic progress specifically, full adjustment to the changing constraints upon--and determinants of--organizational behavior is perhaps one of the more difficult. As indicated in the

paper I delivered Tuesday morning, these constraints and/or determinants may be viewed as the STAPLE of any given environmental gestalt [8]. STAPLE, as discussed in that document, refers to a mnemonic that reflects the Social, Technological, Administrative, Political, Legal and Economic components operative in any given point in time and space.

The adjustment to the dynamics of a given environment--the independent controllable and non-controllable variables, if you will--is rendered even more difficult by the impact of what might be termed a "cost squeeze" upon concerned government agency postures. That is, there is a growing inability on the part of many public agencies to satisfy commitments and programs--even assuming that these were, in fact, compatible with the rising levels of expectations and aspirations unique to varied segments of the body politic--in the face of: rising costs, relatively fixed resources, and, perhaps of even more relevancy than the preceding two, relatively fixed concepts.

It is suggested here that it is quite probable that we might be able to construct meaningful algorithms of the relationships between such things as: public expectations and/or aspirations, costs, concepts, commitments, and programs. Assuming that we can accomplish the "arithmetic" implicit in the foregoing, I fear that, although no doubt interesting and perhaps worthwhile, it will not be enough. We must then proceed to consider the infinitely more difficult areas of searching for a coherent public policy, strategic doctrines, tactical alternatives, and complementary activities.

There are obviously several fundamental difficulties involved in the search for effective, as well as acceptable, solutions to these kinds of problems and the types of conflict previously discussed in this paper. One of the more apparent difficulties is the tendency to search for simplistic, and preferably the more final the better, solutions to what recent history has shown to be a complex continuum of interactive problems. A manifestation of these attempts at simplification may be seen in the frequency with which avenues assumed to have relevancy to either averting or controlling riots are viewed as independent activities to be undertaken in some sequential manner. This is, perhaps, a relatively comforting way to look at the problem. To borrow, perhaps not too inappropriately, from the many, many writings in the field of counterinsurgency, it is a view that is wholly compatible with what has been referred to by Amrom Katz, of the RAND Corporation, as the traditional view of conflict: first fight, then make peace, and then rebuild--repeating the cycle as often as is necessary, or as capabilities permit. As Katz points out, it is not, however, a view that is compatible with the nature of conflict as it presently exists in less developed or developing countries.* It is incumbent upon the government to simultaneously pursue programs and wage campaigns aimed at:

1. identifying and meeting rising levels of the people's expectations;
2. establishing and satisfying governmental commitments;

*I would point out that the United States is, despite its position in the world, still a developing country. As the result of an almost pathological preoccupation with the administrative amenities, I would also assert that most of our institutions are eminently suited to sequential activities associated with neatly compartmentalized structures called variously departments, bureaus, divisions, and the like.

3. producing meaningful economic and social progress in terms of tangible advances in substantive areas such as education, employment, housing, health, and the like;
4. developing a viable and credible government presence;
5. assuring the security of the people and their property; and,
6. soliciting and encouraging meaningful participation of people in activities associated with the foregoing programs.

Thus, from a strategic point of view it is both apparent and essential that the problems posed by either incipient or actual civil disorder must be addressed along several different, but interdependent, avenues. Here again, it would appear that some of the techniques unique to operations research and/or operations analysis have distinct applicability. Without in any way minimizing the complex nature of the overall problem and the importance of strategic conceptualizations of solutions, within a framework of coherent public policy, it would appear eminently desirable from a tactical standpoint, however, to factor out--from the larger set of issues related to social and economic change--those issues associated with the control of civil disorder.

Deterrence or suppression of civil disorder involves, as one of the central issues, the problem of authority and control. It also involves the acquisition and allocation of resources to facilitate the maintenance or regaining of authority and control. In addition, it involves ancillary problems associated

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with the selection and capabilities--as well as the consequences attendant upon faulty or inappropriate selection--of the instrumentalities and methods of government to be employed in both gaining and maintaining control.

There is a very real requirement for developing the capability to identify in specific, factual and documented terms, both the type and form of situations indicative of pending or actual conflict. This is roughly analogous to threat identification which, in turn, is an essential prerequisite to threat analysis. These types and forms of situations range from legitimate and proper expressions of dissent, through legitimate peaceful demonstrations, to overt violence of the kind one associates with the terms "riot" or "insurrection." Here, there is a real need for "hard" data, and the corresponding capability to gather (overtly and covertly) information, analyze, synthesize, and most important of all, act appropriately upon, the data, if the functions of situation analysis and resource allocation are to be other than exercises in futility.

The activities referred to above imply more than merely estimating the number of individuals--militants or otherwise--who may be of interest to the police. While these data, if indeed they are available, are no doubt of value, they must be supplemented with additional information. This additional information relates to the real or imagined deficiencies implicit in other spheres of conflict, i.e., social, political, economic, etc., the presence of which serves to furnish the bases of a "cause" or rationalization justifying violence on the part of both the militant and what we might euphemistically refer to as the "impatient dissident."

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Implicit within the foregoing, although perhaps not too clearly stated, is the notion that in order to deal effectively* with incipient or actual conflict situations it is necessary that we know something of the various "states of nature," and "competitive strategies" that exist in the real world. We must know something about these things so that we may allocate resources so as to achieve optimum results. We must also know something about these things so that, from an operational standpoint, we may employ the concept of controlled response. This concept of controlled, or selective, response embodies the requirement for matching a specific response to both the strategic and tactical demands of a given situation.

Insufficient, or inadequate, levels of response--whether offensive or defensive*--are quite likely to result in the dissipation of resources with no significant effect other than a possible further weakening of the government's position. Over-response, on the other hand, although it may accomplish a given tactical objective such as the neutralization of a specific individual, group of individuals, or "target," may do so at the expense of some other strategic objective. For example, overly aggressive tactics may effectively neutralize a given threat, but do so at the expense of more people becoming disaffected from the government and its aims and more closely allied with the dissident forces or causes.

*We might adopt the rather trite differentiation between effective and efficient here. Effective refers to doing the right things, while efficient refers to doing things right.

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The foregoing discussion becomes one of more than merely dialectic significance when one considers the general range of problems and the acceptability of alternative solutions--in terms of probable consequences--inherent in the various mixes of tactical situations. Programs aimed at developing viable systems--strategic, tactical, and operational--for the containment and/or neutralization of activities associated with civil disorder must include both definition and integration, in operational terms, of the legitimate missions of the police to be sure. But, in addition there must be an explication and integration of the missions of the other agencies of government that are involved, especially those that are involved before "the shooting starts." It is clear that the police, either alone or augmented by the military, cannot be delegated exclusive responsibility for the maintenance of public order. In addition, the capabilities--technological, procedural, and people--must be acquired. Finally, new concepts of organizational relationships must be explored, exercised, and evaluated in the context of the extent to which they complement and contribute to the achievement of public policy.

In summary then, we are now in an era in which the adjustment of operating programs relative to both the causes and consequences of civil disorder to limited resources has become an essential element in the daily life of every concerned planner and manager. If we wish to provide for the maintenance of an optimum condition of internal peace and stability, then the government official--not just the policeman--the elected representative, the scientific, business and industrial communities, and the "body politic" must examine very carefully the ramifications of today's dynamic environment. There is a

real urgency implicit in the need for developing the concepts and acquiring the new knowledge, techniques, and tools essential to an understanding and eventual solution to the problems underlying and associated with civil disorder. Similarly, there is an equally important, but perhaps more difficult to satisfy, need for translating the concepts, technologies, and resources into viable institutions and operational programs.

Operations research is a tool. It can help man examine the alternatives and priorities associated with things like problems, policies, objectives, constraints, strategies, tactics, states of nature, and decisions, in terms of relative utility and effectiveness. When the techniques of OR are placed in context with the capabilities of contemporary technology, especially computer technology, it becomes an even more powerful tool. It is exceedingly valuable when one wishes to examine the probable consequences attendant upon breaking with traditional ways of doing things. But it is still a tool--the value of which is a function of the material it has to work with and the humans using it. It is not a panacea. Neither is it a substitute for an omnipotent decision-maker. The decision-maker is man. The determination of criteria of effectiveness is also a task of man.

In closing, I would like to return once again to the words of Professor

Kissinger:

America is now at . . . a critical juncture. For awhile longer we may be able to hold on to what we have and perhaps even extend our achievement by proceeding along familiar routes

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Our generation cannot afford a disaster The question before America is whether it can muster the dedication and creativity before the worst has happened

The deepest cause of the inhumanity of our time is probably the pedantic application of administrative norms

Our challenge is to overcome an atmosphere in which all sense of reverence for the unique and therefore the capacity for real innovation stands in danger of being lost The way we face this challenge will determine the spontaneity of our national life, and the future of the concept of the dignity of the individual [9].

I make only one request of those who would prefer not to become really involved in this undertaking. Condemn neither the police and their support forces, nor the rioters and their support forces, for the violence in our streets. To do so would, to paraphrase Shakespeare, be to condemn the actors and not the fault. To those who most vociferously condemn violence as a means of conflict resolution and its often tragic consequences, I would urge an equal denunciation of indifference and its almost certain consequences.

To those of us who, by virtue of either our intellectual capability or our job description, claim membership in the scientific community, I would deliver a challenge: Let us not be content with doing merely that which we know we can do, or for which we can easily obtain contracts. Let us, rather, do those things which must be done. If this means, and I think it does, a dedication and level of effort truly comparable to the Manhattan Project, the question is not really whether we can afford to undertake this, but rather, whether we can afford not to.

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Task Force Reports:

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Unclassified

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) System Development Corporation Santa Monica, California		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE Riot Prevention and Control: Operations Research Response			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (First name, middle initial, last name) William W. Herrmann			
6. REPORT DATE 8 April 1968		7a. TOTAL NO. OF PAGES 24	7b. NO. OF REFS 10
8a. CONTRACT OR GRANT NO.		9a. ORIGINATOR'S REPORT NUMBER(S) SP-3116	
b. PROJECT NO.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.			
d.			
10. DISTRIBUTION STATEMENT Distribution of this document is unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
13. ABSTRACT In terms of alternative strategies, tactics, states of nature, utility measures, and criteria of operational effectiveness there are considerable differences between pursuing the objectives of: (1) simply maintaining public order; (2) maintaining public order within the constraints of a free society; and. (3) improving systems for the "administration of justice." There is a real urgency implicit in the need for developing new concepts and acquiring new knowledge, techniques and tools essential to an understanding of the problems associated with civil disorder. Of equal importance, there is an urgent need for translating the new concepts, technologies and resources into viable institutions and programs that may bear little resemblance to "traditional" patterns of action. Operations research offers an array of techniques that may be of considerable value in examining the probable consequences attendant upon breaking with traditional approaches to what appears to be a complex interrelationship of intransigent problems.			

DD FORM 1473
1 NOV 65

Unclassified
Security Classification

Unclassified

Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Riot prevention Operations research Public order						

Unclassified

Security Classification