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A PRELIMINARY INQUIRY INTO CITIZEN CONTRIBUTIONS TO COMMUNITY SAFETY AND SECURITY

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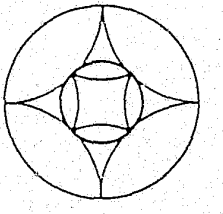

Morgan Hall 121
Indiana University
Bloomington, IN 47401

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Frances Pennell Bish and Nancy Malecek Neubert
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INTRODUCTION

Citizens contribute in important ways to the production of a variety of public goods and services. Education is the most obvious example of a public good that requires citizen input. Without the cooperation of those to be educated, the good (i.e., educated people) cannot be produced at all. A clean aestheticially pleasing and healthy environment, similarly, involves production activities on the part of both public (and private) agencies and citizens. Indeed, in rural areas lacking a publicly organized means of production, citizens may bear the major responsibility for carting and disposing of solid wastes - just as citizens once produced many of the services (i.e., general area patrol; law enforcement) we now consider to be the responsibility of police agencies. The production of a number of other public goods and services also depends upon contributions made by citizens.

Although these citizen contributions are implicitly recognized by most analysts, they are seldom explicitly accounted for in studies of the production of public goods and services. The failure to take citizen contributions into account reflects, in part, the obvious difficulties involved in measuring and evaluating these. It may also reflect, however, certain biases in the way we think about public policy problems. Traditionally, for example, we have tended to focus almost exclusively on the activities and expenditures of public agencies. Only recently have we begun to develop analytical frameworks for dealing with the variety of other participants (citizens, private profit-making and non-profit firms, etc.) that may contribute to the production of public goods and services.[1]

We have also tended to think of citizen participation as something apart from the normal production of public goods and services. Others have noted a producer bias both in the delivery of publicly provided goods and services and in our analysis of alternative strategies for producing such goods and services. Some have recommended that we consider more fully the costs citizens bear as consumers of public services.[2]

Within this framework we have tended to view production and consumption as separable activities - each involving a different set of actors or participants. In many cases, however, the line between consumption and production (and between consumers and producers) is a difficult one to draw. The consumption of nearly all goods (both public and private) involves consumer inputs. At a minimum, consumers contribute their presence (i.e., a haircut). But they may also contribute a variety of other goods and services in order to transform purchased goods into a usable or consumable form. In order to consume food products, for example, consumers contribute cooking utensils, energy sources and the time and effort needed to transform purchased goods into a product for final consumption. To the extent that consumers contribute to the production of a final product, they function simultaneously as "consumers" and "producers." Citizens also function as "producers" where their cooperation is essential to the production of a public good. Education and a clean environment are both examples of goods which, if they are to be produced at all, require citizen inputs.

Rather than treating citizen inputs as irrelevant to the analysis of the production of public goods and services, we suggest that citizen contributions may thus be usefully treated as routine factors in the production of a relatively wide range of public goods and services, of which citizens are, in turn, the beneficiaries. In this paper, we make a preliminary attempt at conceptualizing and defining the role of such contributions within the context of the production of community safety and security. Although we use community safety and security as an example, we hope our analysis will be relevant to the broader class of goods and services where citizen inputs may be important.

We begin with a brief discussion of community safety and security. We then turn to a discussion of what it is that citizens do to contribute to this valued state of affairs. Next, we consider the implications of citizen contributions for analyzing alternative arrangements for producing safety and security. We conclude with a brief comment on the policy relevance of our analysis.

COMMUNITY SAFETY AND SECURITY

Defining Community Safety and Security

An understanding of the ways in which citizens contribute to the production of community safety and security requires some specification of the desired output. Specification of output is a much simpler matter in the production of private goods (e.g., automobiles) than in the production of public goods.[3] The problem of specifying and measuring output is particularly difficult for goods and services like community safety and security - - given

the multi-dimensional and somewhat subjective nature of the output. All one can hope to do is to arrive at concepts, and means of measuring these concepts, that approximate reality.

Safety may be called the "objective," security the "subjective" sense of the desired state of affairs. The term safety is generally used to mean "freedom from injury or risk," or "secure from threat, danger, harm, or loss."[4] Security is often used as a synonym for safety, but it also connotes a sense of freedom from fear, ease of mind or lack of anxiety.[5] Both may be tied to the ideas of loss and probability of loss.

A loss may be thought of as an unintentional parting with something of value. That which is valued may be a tangible good or an intangible one (i.e., ease of mind). In speaking of losses, we thus wish to include both tangible losses (i.e., loss of property and physical harm) and psychological ones -- even though the latter are more difficult to measure.

The range of losses one might wish to consider within the context of community safety and security is, indeed, broad. Losses accrue to citizens as a result of their own actions, as a result of the actions of other citizens and/or as a result of the actions of public officials. These losses result from criminal activity, traffic accidents, negligence in personal safety around the home and so on.[6]

Which losses one chooses to investigate will depend upon the perspective of the analyst and the purpose of the analysis. Our major interest has been in the production of police services, and the relationship between citizens and police service

production. Thus, most of the examples we use relate to activities typically engaged in by police and citizens. The methods presented here for considering community safety and security are, however, applicable to the broader class.

The level of safety in a community with respect to criminal activity is reflected in measures of the expected value of losses due to criminal victimization and/or the probability of loss due to victimization. Together, the expected value of losses due to victimization and the probability of loss, may be used to define and measure the level of risk in a community which conceptually may be thought of as the expected value of losses times the probability of a loss.

We would expect variations from one neighborhood or community to another (and among different groups and classes of citizens) both in the expected value of losses and in the probability of a loss occurring. We would also expect variations in citizens' perceptions of risk levels in a community and in their attitudes toward perceived levels of risk. How secure community residents and property owners feel depends upon the perceived level of risk and their attitudes toward that perceived level of risk, the latter reflecting individual preferences for "safety and security."

Because individuals vary in how they value goods (and their loss), their demand for a given level of community safety and security (or inversely, for a given level of risk) also varies. We would also expect citizens to vary not only in the types of "losses" they fear most but in whether they worry more about the

probability of a loss occurring or the expected value of such a loss. Thus, two situations may exhibit equal amounts of risk (with respect, for example, to any given crime), one because there is a high probability of a small loss and the other because there is a low probability of a large loss, but may be reacted to differently by citizens depending upon whether they place a higher priority on the probability of loss or the expected value of such losses. These variations among individuals can be expected to influence the nature or level of contributions they make.

Citizens may suffer losses not only from "criminals" but also through the improper actions of police and other public agencies with differential authority for law enforcement. Such losses may be thought of either as costs (born by citizens) associated with police service delivery or as decreased benefits or outputs. However such losses are measured, it is important that they be recognized and taken into account -- inasmuchas citizens' feelings of security may at least partly be based on the confidence they feel in their police agencies (i.e., do they expect the police to respond adequately and effectively if they have an emergency) and because it is possible for police activities to have either a positive or a negative impact on the level of safety and security in a community -- a fact we often tend to ignore.

Measuring the Level of Community Safety and Security

Community safety and security is a multi-dimensional concept. Measurement of the level of safety and security in a community requires multiple indicators - even where one has selected a rather narrow subset of losses to examine. Generally speaking, such

measures would include those which reflect:

- the probability of loss (measured, for example, in terms of simple frequencies or more sophisticated predictive models)
- the expected value of such losses (measured in terms of average losses or other predictors)
- citizen perceptions of and attitudes toward the level of risk (i.e., how secure they feel).

Operational measures are difficult, although not impossible, to define. Some examples are:

- the proportion of residents in a given community unable to obtain crime insurance
- the probability of victimization (i.e., the probability of being burglarized, robbed or the object of police brutality)
- the average value of property losses resulting from residential burglary
- the proportion of residents reporting dissatisfaction with actions taken by police in response to a call for service
- the proportion of residents reporting that they do not go out at night (or who otherwise alter their behavior) because of fear of victimization.

CITIZEN CONTRIBUTIONS TO COMMUNITY SAFETY AND SECURITY

The Production Context

A variety of resources, organizations and institutions participate in the production of community safety and security. Police and other agencies within the criminal justice system (i.e., the courts and corrections) are probably the most obvious. Other public agencies are involved to the extent that their activities impinge on the safety and security of area residents and property owners. Parks and recreation programs, for example, may be associated with a lowering of the incidence of certain types of juvenile crime. Private firms also contribute to the production of

community safety and security when, for example, they invest in security guards and/or patrols.

Citizen contributions to community safety and security occur within a complex environment involving the activities of a number of different agents and participants to the production process. Production functions (statements of all combinations of inputs which when combined as efficiently as possible lead to a specified level of output) provide a conceptual tool for arraying the various inputs to the production of goods and services and as such, a useful framework for conceptualizing the role that citizens (and others) play in the production of community safety and security.

A production function for community safety and security, might take the following form:

$$CSS = f\ (I_1, I_2, I_3, \ldots I_Z;\ SC_1, SC, SC, \ldots SC_Z;\ T_1, T_2, T_3, \ldots T_Z)$$

where:

CSS = measures of the level of community safety and security

I_1-I_Z = the factors used to produce a given level of safety and security in a community. I_1, for example, might be the activities of police agencies; I_2, the activities of citizens; I_3-I_Z, the activities of others that contribute to the level of safety and security in a community.

SC_1-SC_Z = the service conditions that influence the level of safety and security, and over which relevant policy makers have little or no control. SC_1, for example, might be the number of juveniles between the ages of 16 and 21; SC_2, the number of persons living below the poverty line; and SC_3-SC_Z might be the other service conditions that affect safety and security in a community.

T_1-T_Z = the technology used in combining the factor inputs T_1, for example, might be the nature of cooperation among police agencies in a metropolitan area; T_2, the nature of police-citizen relationships in a community; and T_3-T_Z, other relevant technologies.[7]

The factors of production are here defined as the activities of the various participants to the production process, and technology, as the way in which these activities are combined. The service conditions are those variables over which a policy-maker may have little or no control - a set of variables which will vary depending upon the perspective of the analyst.

For any given level of safety and security, there may be an infinite number of combinations of inputs. Assuming that technologies (ways of combining inputs) are also important, we may also find a variety of output levels for any given level of inputs. It is not merely the factors' presence that is important, in other words, but the ways in which these factors are combined.

The activities which together contribute to the production of a given level of community safety and security may be thought of as intermediate goods and services which are themselves produced by combining various factor inputs. General area patrol by a police department, for example, is an intermediate service in the sense that its production leads to the production of community safety and security. It also represents at least part of the output of police agencies. To the extent that such output can be measured, and required inputs to its production identified, we can also identify a production function for general area patrol. For each of the factor inputs in our equation, there may thus exist a "production function," which describes the combining of resources to produce that intermediate good or service.

These intermediate goods and services have two main kinds of relationships to one another. As complements, goods and services are required in relatively constant proportions as the level of

output changes. Within a police department, the number of patrol cars may bear a fixed relationship to the number of patrol officers. As the area to be patrolled and thus, the number of patrol officers increases, so too must the number of patrol cars.

On the other hand, some goods and services are substitutes for each other. That is, depending upon other conditions, the services of one particular input may be substituted for those of another. With reference again to police departments, the services of trained dogs may be substituted for those of sworn officers. Or, a community may install lights in parks and dark streets and thereby reduce the number of patrols necessary to maintain the same level of safety and security.

There are several reasons we would expect to observe different combinations of factors in different communities. Even with an assumption of maximum output with any given organization of production there will be more than a single way of combining factors to produce a stipulated level of output.

One reason to predict different factor combinations is different relative price structures among communities. The more substitutibility among factors, the greater the influence of changes in relative prices on the factor mix employed. A second reason pertains to the prevailing institutional arrangements through which safety and security activities are produced. Law, organization, and custom all impose constraints on the range of production methods available, and may also alter the relative prices of various factors.

Thirdly, individuals and communities may have distinct (and different) preferences for the production method itself. This is

a characteristic of services; whereas one is not concerned with the means used to produce his or her car so long as the final product meets specified standards, one may care very much how a given level of safety and security is achieved in the community. Given individual tastes and preferences, one may assume that individuals opt for production methods involving lesser rather than greater direct costs to themselves.

Theoretically, measures of the inputs of citizens, police agencies, and other participants, can be used in a determination of what "difference" the actions of these participants make in the level of community safety and security. Conceptually, the contributions of citizens (and other participants) within this context would be equal to the amount of explained variation in community safety and security that can be attributed to the activities of citizens, holding all other factors constant. To what extent, for example, is the probability or amount of property loss enhanced or diminished by the activities of citizens and police agencies? To what extent do police (and citizen) actions contribute to citizens' sense of well-being? We can also investigate the effects of different ways of combining factor inputs. In large cities, for example, team policing may involve substantially different types of police-citizen interactions than is traditionally the case in large departments. To make such judgements of "difference" requires a comparison of outputs (e.g., comparing levels of risk and citizens' sense of well-being) under alternative production arrangements.[7]

Citizen Activities

Like other inputs to the production of community safety and

security, citizen activities can be thought of as intermediate products which function as substitutes for or complements to publicly organized production activities. Such activities can be roughly divided into those that citizens undertake as individuals, those that citizens undertake jointly with other citizens, and those that citizens undertake in conjunction with police agencies when their efforts are integrated into the production process of police agencies.

Individual Activities. As individuals, citizens install burglar alarms and locks, take out insurance, try to remember to lock the doors as they leave and do a variety of other things that might generally be classified as "self-protective" measures. Such self-protective measures include both purchased goods and services (i.e., burglar alarms, insurance and private security guards) and changes in behavior (e.g., taking taxis, staying home at night). Both types of self-protective measures are designed to reduce the probability of loss and/or the actual or expected value of losses. Burglar alarms, for example, might be expected to reduce the probability of loss occurring whereas insurance might be valued as a means of reducing the expected value of a loss.

Most of the benefits from activities individuals undertake accrue directly to individuals, households, or property-owners. Most of the benefits from installing locks on doors, for example, accrue to individuals - in the form of reduced risk levels and perhaps, a greater sense of personal security.

The variety of programs that have been undertaken to encourage citizens to increase their level of investment in self-protective measures suggests that such activities are also thought to have

significant positive spillovers for the community at large. Police departments have encouraged citizens to inventory their valuables, scratch identification numbers on their valuables and register these with local police departments; they have provided circulars and information on how to burglar-proof one's home and undertaken a variety of other activities - all with the idea of encouraging citizens to take a more active role in protecting themselves from criminal victimization. Public benefits may accrue as a result of such "preventive measures" in the form of avoidance of costs to police in investigating a crime once it has occurred and reduced levels of risk in the community.[8]

Group or Joint Activities Undertaken by Citizens. Citizens also collaborate with one another in the production of activities designed to enhance community safety and security. Church and non-profit organizations, for example, provide family, rape and other crisis counseling, crisis information centers, special programs for juvenile offenders, and a variety of other services which may function as substitutes for or complements to publicly organized production.

Vigilante groups and citizen-organized patrols have existed throughout our history. Indeed, in many cities, citizen-organized patrols were the major form of community law enforcement prior to the establishment of publicly-funded police agencies. In his study of vigilante groups, Brown identifies well over 300 such groups and he includes only those that actually took "the law into their own hands."[9]

According to Brown, early vigilante groups functioned primarily as substitutes for publicly organized law enforcement agencies --

focusing their efforts on outlaws, horse thieves and other threats to public safety in communities lacking their own police agencies. Sometime around the mid-19th century (with the establishment of the San Francisco Vigilance Committee in 1856), Brown suggests a new type of vigilantism appeared - neovigilantism -- which concentrated on groups considered to be a threat to the established order (i.e., immigrants, Jews, political radicals, etc.). Whereas the first type of vigilante group was concerned primarily with the enforcement of laws where publicly-organized production was lacking, the second type arose within the context of existing political struggles among various classes and groups in society.

In the past few decades, we have witnessed a resurgence in the popularity of citizen patrols and vigilante groups. According to one study, more recent citizen groups differ from earlier groups in that they:

> have not killed or taken the law into their own hands. Instead, their primary functions have been the surveillance and protection of their own communities, often as an ancillary group to regular police. They thus more closely resemble the early anti-horse-thief societies which amplified law enforcement through pursuit and capture but did not try to substitute for it by administering summary punishments. Recent groups have performed largely deterrent functions and have not usually held street trials or meted out alley justice.[10]

Recent vigilante groups and neighborhood patrols have also functioned to provide benefits for particularlized subgroups within a community (just as did some of the older "no-vigilante" groups). One well-known example is the Deacons organization -- established in Bogalusa and Jonesboro, Louisiana in 1965 -- which used armed patrol cars to protect blacks and white civil rights workers from Klansmen, police, and white "rowdies."[11] Similarly,

one of the early and most successful undertakings of the American Indian Movement was the formation of a patrol in the city of Minneapolis in 1968 which followed police with the aim of monitoring police behavior and reducing arbitrary arrests and beatings of Indians. AIM members also appeared in court as witnesses and, in this capacity, were able to prove a pattern of discrimination. Their actions resulted in a substantial decrease in Indian arrests.[12]

Many citizen patrols, however, provide generalized protection to members of a community. For example, one widely-known group, the Maccabees, operated in the Crown Heights area of Brooklyn between 1964 and 1966. It included 250 volunteer members and used radio-car patrols to report crime and deter potential criminals in a manner similar to police. Another example is the use of an estimated 8500 volunteers on "tenant safety patrols" in New York City housing projects.[13]

The vigilante groups and citizens' patrols that receive the most attention tend to be those organized in poor communities and/or for the protection of minority groups of one sort or another. As common, however, may be protective efforts on the part of citizens living in middle and high income communities. In some communities, citizens and private firms collectively purchase the services of private patrol agencies. More common may be the organization of private patrols or other security arrangements (i.e., gate security officers; fencing) by developers and/or individuals living in high security (i.e., gated) communities.

Activities Undertaken by Citizens in Direct Cooperation with Police. Some of the most important contributions citizens make to the production of community safety and security are those that involve

direct cooperation with police agencies. Such contributions include both tangible and intangible goods and services.

Among the tangible goods are contributions citizens make as reserve officers or possee members for police organizations. The use of reserve officers and possees has been particularly popular in the Western and Mountain states -- although examples of voluntary efforts on the part of citizens for police agencies are evident throughout the United States.[14] These reserve programs and possees are organized in a number of different ways and serve a variety of functions. Some reserve programs are operated by police departments with individual citizens applying for membership. More commonly, the reserve, possee or auxiliary is a separate group which promulgates its own rules and regulations, admits members and raises its own funds. In Arizona, for example, citizens are guaranteed the right to form possees and the formation of possees is done at the initiative of citizens -- although county sheriffs may approve their charters and establish other guidelines regarding their formation and operation.

The key difference between these groups and others organized by citizens is that their production activities are carried out in direct cooperation with police agencies. In some cases, reserves function as regular police officers. This is particularly common in small towns where reserves may contribute a specified number of hours per week or month to regular police operations. In other cases, reserves may only assist police agencies in peak load situations - i.e., parades, other major events. In western states where counties are large and often unpopulated, possee members have traditionally played an important role in

carrying out search and rescue activities and other functions for which it would be highly expensive for the police agency to maintain a specialized crew.

As important as these tangible contributions are the intangible contributions citizens make to the production of police services - contributions that may be much more difficult to measure and evaluate. The willingness of citizens to report suspicious activities and the provision of information which may lead to arrest or recovery of property are important inputs to police production activities. A recent RAND study, for example, indicates that at least 50 percent of all major crimes cleared are solved as a result of citizen cooperation and information.[15]

These intangible contributions can be thought of as flowing from capital goods (produced means of production which yield useful service in the production for final consumption) or in other words, as the flow of service from capital. The good will citizens feel toward their police can be thought of as having been produced through prior interaction of citizens and police. Once having been brought into existence, this goodwill yields a valued service -- namely the willingness to convey information to police.

THE ANALYSIS OF CITIZEN CONTRIBUTIONS

In considering the production of community safety and security and the forms which citizen contributions take, there are many questions which might occur to the analyst. Here we focus on two: Under what circumstances are citizens likely to invest in such activities; and what are implications of citizen contributions for the analysis of resource allocation in producing community safety and security?

The Demand for Citizen Contributions

Citizens (including residents and property owners) can be expected to invest in activities which contribute to their own and/or others' safety and security when benefits exceed costs and net benefits are greater than for alternative investments of time and other resources. With respect to particular types of activities, we can expect more activity to be undertaken where benefits accrue directly to citizens than where the benefits are more public in nature - unless, of course, the share of benefits captured by the individual is sufficiently large. Thus, we would expect citizens to invest more frequently in locks than neighborhood patrols.

The benefits expected by an individual from making contributions to community safety and security are not necessarily those relating to increased safety and security. Benefits may accrue in the form of the enjoyment of participating in a social organization or group, the pleasure of assuming some of the authority status of police officers, or the satisfaction of helping others. The nature of anticipated benefits as well as their amount is likely to vary from activity to activity.

Individuals will have varying perceptions of the benefits to be gained through expenditure of time, effort, and money on safety and security, and their effective demands will vary accordingly. Demand for personal protective measures is likely a function of the expected value of losses through victimization as well as preferences for bearing risk, for any given level of police-provided protection. We might thus expect individuals to invest in personal actions where their demand for safety and

security is higher than the level provided to the general public through the efforts of, for example, police agencies, or where their preferences are for a different mix of intermediate goods and services.

Is one more likely to observe citizen activity with high or with low levels of police activity? To the extent that the actions of citizens are substitutes for the actions of police, one will observe an inverse relationship. At least one study of private investment in security by small businesses did find this relationship between private and public expenditures, although not at a statistically significant level.[16]

On the other hand, one may speculate that a complementary relationship exists between citizen and police for at least some types of citizen contributions. Specifically, the higher the level of police performance and the greater the investment of police in the earlier-identified capital good, citizen trust and goodwill, the more likely are citizens to contribute in the form of cooperation with the police -- including reporting suspicious activity, providing relevant information, etc. One example of this is the Los Angeles police department's basic car and team policing plan (which involved not only a re-organization of services delivery but a substantial investment in overtime for officers attending community meetings) which resulted in a substantial increase in the number and proportion of arrests and crimes cleared through citizen involvement.

Efforts to monitor or alter police behavior (i.e., to reduce the losses that accrue to citizens as a result of improper police actions) can also be thought of as goods that have a complementary

relationship to police activities -- in this case police activities that have a negative impact on the level of security in a community.

We would, obviously, expect to see more citizen investment in patrols of the type established by AIM in Minneapolis in communities where at least some segments of the community were targets of police improprieties. As police-citizen relationships improved, we would expect to find fewer such patrols.

The nature and level of citizen involvement in production activities may also vary with the organizational arrangements used for public production of community safety and security. What police agencies do and how they are organized affect the price structure citizens face in making their own investment decisions. It might be hypothesized, for example, that the price or costs to a citizen of providing information are often lower in communities served by small police departments (particularly small, homogeneous communities) than in communities served by large police departments -- if only because the citizen is more likely to know someone on the force and thus, to feel comfortable about making a call to an "official" agency. This is certainly a hypothesis underlying many recommendations for decentralization of larger police departments and/or team policing. To the extent that citizen efforts do contribute positively to the level of safety and security in a community, the relationship between the nature and level of such investments and the organization and activities of public police agencies would appear to be an important area of research in the future.

Implications of Citizen Contributions for Questions of Resource Allocation

A second question of interest are the implications of citizen contributions for resource allocation in the production of community safety and security. The fact that resources beyond those purchased by police (and other public) agencies are needed to achieve a given level of safety and security has implications, for example, for the analysis of the efficiency of alternative arrangements for producing safety and security.

In order to arrive at some estimate of the efficiency of alternative arrangements for producing safety and security, one needs some measure of the costs of production. We often take agency expenditures (i.e., the market price times quantity purchased) as a measure of the costs of using required inputs to achieve a given level of output. An important distinction exists between costs and expenditures, however. Costs (i.e., opportunity costs) are a measure of the highest value of a particular resource, human or non-human, in alternative uses. Costs are associated with the use of any factor or resource which is useful when employed in any other way. This does not imply that the factor or resource so used receives compensation in monetary terms and herein lies the distinction between costs and expenditures. Expenditures are monetary transfers for goods or services rendered for the achievement of some desired outcome. There is no necessary relationship between costs and expenditures although we often make the simplifying assumption that costs are equal to expenditures.

Being concerned with the costs of community safety and security as it is produced, for example, by police agencies, entails the

investigation of more than records of police expenditures. This is true for two reasons. First, expenditures for a good or service may not reflect the costs actually incurred as will be the case where the good is characterized by externalities. Secondly, as we have stressed throughout, more than the resources purchased by police agencies are required for the production both of a given level of police output and community safety and security. The citizens, for whom the organized production is carried out are themselves, as we have seen, involved in production activities.

Broadening the production function to include contributions citizens make, how is one to evaluate the costs of achieving a particular quantity and quality of output? For those contributions made by citizens through purchases in the marketplace we can assign the value of the expenditures made by citizens. Estimated outlays for private security measures in 1970 are $3.3 billion, with approximately half a billion dollars of that total made by individual households as opposed to businesses.[17]

For other expenditures by citizens, the opportunity cost of the time spent in the activity is the appropriate conceptual measure, and a good way to begin thinking about approximations. For some citizen activity, for example vigilance, the marginal cost may approach zero. The costs of the service of capital (i.e., of citizen vigilance and willingness to call police) are incurred by the police agency in their efforts to maintain the so-called capital of trust and good will -- as was the case in the Los Angeles Team policing project mentioned earlier. Citizens may also incur substantial costs -- simply in order to <u>use</u> services theoretically available to them but which require some intiative

on their part (i.e., criminal investigation).

To efficiently produce a given level of output, given technology, compare the relative contributions of an additional dollar's expenditure on each of the factors of production to the level of community safety and security. That is, to be efficient in the production of community safety and security, citizens' contributions or investments must be weighed against those traditionally considered (namely those of the police department). If an additional dollar spent in the private sector by citizens (and/or by police to encourage citizen investments) does more to increase community safety and security than a dollar spent for public protection, the former would appear to be the preferable alternative.

The optimal amount of personal security to be purchased by an individual is that quantity where the marginal costs are equivalent to the marginal benefits to be achieved, the benefits calculated, for example, as the decrease in the probability of theft times the expected value of loss per theft. From the community's point of view, if the marginal costs of dealing with crime once it has occurred (i.e., in criminal investigation) are greater than the marginal costs of taking action to reduce the probability of its occurring, there are possible gains from public subsidy for individual action up to the amount of the difference in the costs of dealing with the potential crime.

RELEVANCE FOR PUBLIC POLICY AND SUMMARY

The twin issues of costs and extra-agency participants in the production process carry some significance for those who would influence public policy with respect to police. In order that

recommendations for change lead to hoped-for results, the linkages through which a change is thought to be effected should be known. Barring this, a "theory" of the association between the recommendation and the outcome must exist, inasmuch as the theory can be shown to "work." We are not particularly sanguine over the usefulness of a theory (i.e., its ability to predict) which does not take into account the role of citizen-consumers in the production of their safety and security.

Similarly, an analysis of police operations which considers expenditures alone, and not costs, is inadequate to the requirements of the questions to be answered. That is, if public policy analysis is to come to grips with the efficiency of a public program, it must deal in terms of costs, not expenditures. Disregard of costs in favor of expenditures does not make costs go away. They continue to be borne, with little probability of their consideration influencing the design of public policy.

What is appropriate for an individual entrepreneur or agency head is not, in other words, appropriate for the policy analyst. Individuals have no incentive to consider the costs others bear for which they are not required (by the legal construction of property rights) to compensate. Any agency's chief executive should be evaluated in terms of the output he or she achieves for a given level of public expenditure. On the other hand, any public arrangement should be evaluated in terms of the output achieved for a given level of <u>cost</u>.

Although it may be difficult to operationalize and measure all of the various factors which contribute to the production of safety and security, there are a number of reasons why it is

particularly important to pay attention to citizens inputs.

To the extent that organized public production of activities to enhance community safety and security is designed, in theory, to benefit citizens, one might wish to know at the very least, the level and nature of the contributions citizens make in order to consume or use such services. To the extent also that consumers in the "public market" are constrained in their choices with respect to the price, quality, and quantity of the goods they consume (constrained that is, to the point of moving from that jurisdiction), one may also wish to know the degree to which citizens supplement publicly provided services (or alternatively, would be satisfied with both a lower tax price and level of output).

Another reason for considering citizens' contributions is the fact that what citizens do affects the efficiency and effectiveness with which publicly-organized production is carried out. Many police inputs to the production of community safety and security (e.g., criminal investigation) depend upon the cooperation of, and information provided by, citizens.[16] In order to analyze the efficiency with which organized public production is carried out, then, we need to consider contributions made by citizens to public production activities.

Finally, within some range, investments in police (and other criminal justice agencies) and investments in or by citizens can be thought of as alternative ways of allocating scarce resources for the production of community safety and security. In order to arrive at some assessment of the efficiency of alternative ways of producing <u>community safety and security</u>, one must compare the relative contributions of an additional dollar's

expenditure on each of the factors of production (including those of police and citizens). Estimates of the return that can be anticipated from alternative investments can only be arrived at if we begin to treat citizen contributions as routine elements in the production of community safety and security.

Notes

1. A focus on public goods as opposed to publicly-provided goods and services leads one quite naturally to consider the variety of participants to the production process. For a treatment of the production of public goods as involving a "public services industry," see: Ostrom, Vincent, "Polycentricity" (Bloomington,IN: Workshop in Political Theory and Policy Analysis);Gregg,Phillip M., "Units and Levels of Analysis: A Problem of Policy Analysis in Federal Systems," Publius (Fall, 1974),pp. 59-86.

2. Robert Warren and Louis F. Weschler, "Consumption Costs for Public Goods and Services" (mimeo)(Los Angeles: School of Planning and Urban Studies, University of Southern California,1974).

3. See, for example, Elinor Ostrom, "On the Meaning and Measurement of Output and Efficiency in the Provision of Urban Police Services," Journal of Criminal Justice,Vol. 1, pp.93-112.

4. Webster's New Collegiate Dictionary (Springfield, Mass: Merriam and Company, 1961),p.765.

5. ibid.,p.744.

6. We generally invest public funds in efforts to reduce the probability of occurence of such losses and/or their expected value where there are assumed to be public or "community" benefits from doing so. Ambulance and other emergency services are, for example, frequently provided through public funds. In this case, it is the assurance that the service is available if needed that is the public benefit. --ie. the option to use the good rather than the use itself that is the public good. The same may be said of many of the activities produced by police agencies (ie.criminal investigation). For other activities, the service itself may confer public (jointly consumed) benefits (ie. general area patrol).

7. This is based on Werner Z. Hirsch, "The Supply of Urban Public Services,"

In Issues in Urban Economics ed. H.S. Perloff and Lowden Wingo (Baltimore: John Hopkins University Press, 1968),pp.435-476.

8. It is also possible that crime prevention activities may have negative spillovers for other communities. If the undertaking of crime prevention measures in one community leads to an increase in the price of criminal activity in that community, criminals may opt to move to an adjacent community where relative prices are lower.

9. R.M. Brown, "The American Vigilante Tradition," in The History of Violence in America ed. H.D. Graham and T.R. Gurr (New York: Bantam,1969)

10. Gary T. Marx and Dane Archer, Community Police Patrols: An Exploratory Inquiry. (Springfield,VA: National Technical Information Service,1972),p.4.

11. ibid.,p.5

12. Indiana Daily Student, June ,1976.

13. op.cit.,pp.5-6.

14. For a discussinn of two such volunteer programs, see: Nancy M. Neubert, "The State Police of Crawford and Erie Counties," (mimeo) (Bloomington, IN: Workshop in Political Theoryand Policy Analysis, Indiana University, 1975); " "The Maricopa Sheriff's 3000 Volunteers," Workshop Reports,No.4 (May,1976),p.4. (Bloomington,IN: Workshop in POlitical Theory and Policy Analysis).

15. Peter W. Greenwood and Joan Petersilia. The Criminal Investigation Process Volume 1: Summary and Policy Implications. Prepared under a grant from the National Institute for Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, Department of Justice (Santa Monica: Rand, 1976).

16. Ann P. Bartel, "An Analysis of Firm Demand for Protection Against Crime," Journal of Legal Studies, Volume IV(2) (June, 1975),pp.443-478.

17. James Kakalik and Sorrel Wildhorn, Private Police in the United States (Santa Monica: Rand, 1971).

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