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LIMITING SUPPLIES OF DRUGS TO ILLICIT MARKETS

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The basic purpose of supply reduction efforts is to influence the relative cost and availability of abuseable drugs. In designing supply reduction efforts, one must decide which drugs produce the greatest social problems, and how the supply of each drug can be most effectively reduced. A review of the current situation suggests that supply reduction efforts should be shifted to concentrate more on heroin, barbiturates, and amphetamines. Unfortunately, analysis reveals that effective control of these different drugs requires remarkably diverse organizational capabilities. The control of heroin depends on a capacity to make conspiracy cases against international dealers. The control of barbiturates depends on an increased capacity to prevent diversion from legitimate domestic distribution. And the control of amphetamines requires effective action against small scale illegal importation from Mexico, diversion from domestic distribution, and illegal domestic production. To handle these diverse problems, DEA must be given time to develop and deploy a variety of professional capabilities besides undercover agents.

I. Introduction

The policy to reduce the supply of drugs to illicit markets is an easy mark for critics. It is vulnerable to an ideological attack which questions the right of the government to intervene in private choices about the shape of an individual's life,¹ and a practical attack which questions the capability of the government to reduce the availability of drugs to levels where many are discouraged from use without imposing substantial resource costs, or intolerably infringing on civil liberties (Packer, 1968).

At a slightly less fundamental level, the policy of a given moment is vulnerable on efficiency grounds. The strategy is arguably concentrated on the wrong drugs, or inefficiently targeted against the production and distribution systems which determine the supply of drugs to illicit markets in the U.S.² Major loopholes remain open, unique vulnerabilities are not exploited, crucial bottlenecks are ignored.

Finally, spectacular events such as shootings, mistaken identities, bribes, cover-ups, and official vendettas shock us all. To some, these problems are fundamental to our current policy; frequent occurrences cannot be avoided, and

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the "costs" of such events loom very large in the overall accounting of the effects of the policy. To others, these problems seem less fundamental—relatively easy to avoid, and small in terms of the overall impact on the policy. For all, however, these events stir visceral anxieties registering as misgivings among reasonable supporters, and opportunities for cathartic indignation among reasonable critics.

In the face of the varied and unrelenting attacks, those responsible for the policy protect the niche they have found in the government's business. They shore up legislated authority and appropriations. They cling to their civil service status. They console one another with simple objectives and professional virtues that survive from previous eras. They preach to the already converted. And they wait for the blows to slacken—confident that in the end, they can continue as before.

What is missing from this debate, *on both sides*, is an accurate sense of both the potential and the limitations of a supply reduction strategy. We lack agreement about reasonable objectives for the policy, a shared calculation of the performance necessary to achieve the objective, and a common evaluation of current bureaucratic capabilities relative to the performance requirements. Lacking this perspective, the endless debate exhausts the combatants without stimulating or guiding improvements.

The purpose of this brief essay is to frame the debate by proposing a coherent, reasonable view of the objectives, requirements and major problems of the current supply reduction strategy. With luck, the perspective proposed here can attract the loyalty of both reasonable critics and reasonable supporters of supply reduction efforts.

II. Limited Objectives of a Supply Reduction Strategy in an Overall Policy Towards Drug Use

The recent *White Paper on Drug Abuse* did an admirable job of defining the objectives, costs and limitations of supply reduction efforts, and placing these efforts in the context of an overall policy towards drug abuse. The position can be paraphrased in the following terms (Domestic Council Drug Abuse Task Force, 1975:2-4).

- The fundamental objective of a supply reduction strategy is to make drugs inconvenient, expensive, and somewhat risky to obtain.
- If this objective is accomplished, many people will be discouraged from experimenting with drugs, many people already using drugs in experimental patterns will be discouraged from advancing to chronic, intensive levels of use, and many chronic, intensive users will be motivated to seek treatment or reduce voluntarily their drug consumption.
- These benefits are costly to secure. The costs are measured in terms of direct governmental expenditures,³ foregone opportunities in bargaining with foreign governments for other objectives, possible erosions of civil liberties, adverse effects on current users (such as stigmatization, poor health, general anxiety), and other bad side effects (such as the creation of black markets directed by powerful criminals).
- Moreover, the benefits are limited. Supply reduction efforts will probably fail to prevent new drug use in areas where drug use is already endemic.⁴ And they will motivate current users to seek treatment only if adequate treatment capacity is available to accommodate them.
- Consequently, in designing an overall policy towards drug use, supply reduction efforts must be complemented by other policy instruments. Other types of prevention programs must be used in areas where drug use is already endemic. A sufficient quantity and variety of treatment capacity must be available to minimize the adverse effects of supply reduction efforts on current users.

This analysis clearly represents an advance over the days in which the "enforcement approach" was seen as a mutually exclusive competitor to the "medical approach," and advocates on each side fought heated ideological battles for larger shares of an expanding federal budget for drug abuse prevention. However, as successful as the analysis is in setting supply reduction efforts in an appropriate context, the simple description of the *objectives* of the supply reduction efforts masks two important complications.

First, many drugs have legitimate medical uses. To preserve the benefits associated with legitimate medical use of the drugs, we should make the drugs easily and inexpensively available to legitimate users. In effect, we must create two different markets each with a different level of price and availability; an illicit market in which drugs are expensive and inconvenient, and a legitimate market in which drugs are cheap and readily available. Note that the need to preserve the legitimate market complicates not only the *description* of the objectives of supply reduction efforts, but also the design of strategies to achieve the objectives. For nearly all drugs, the problem of sealing off a legitimate sector will exist at some stage of production or distribution, and our success in controlling diversion will have a decisive influence on the level of supply to illicit markets.

Second, not all drugs are equally dangerous in illicit use. At any given level of use, drugs differ in terms of the consequences for a user's health, economic capability, and level of criminal activity.⁵ In addition, drugs differ in terms of the chance that an experimental user will advance to chronic, intensive use of the drug. The objectives of a supply reduction effort should reflect those differences. Drugs that are dangerous and likely to lead to chronic, intensive use should be more difficult to find than drugs which are less dangerous and less likely to lead to chronic intensive use. This is true partly because scarce resources require us to concentrate on drugs that cause the greatest social problems, and partly because it is desirable to deflect consumer choices to the less hazardous drugs.⁶

Thus, the objectives of a supply reduction strategy are slightly more complicated than simply making all drugs inconvenient, expensive, and risky to consume. One must be concerned about preserving a legitimate market, and the relative magnitude of the threats associated with the different drugs.

These complications can be accommodated by introducing the concept of "effective prices" for different drugs in different markets.⁷ The effective price is defined as an index of all things that make drugs difficult, expensive or dangerous to consume: dollar costs, amount of time required to secure the drugs, the toxicity of adulterants, uncertainty about the actual dose, risk of arrest, and the risks of being defrauded or mugged in the transaction. Given this definition, we can describe the objectives of a supply reduction strategy in terms of a desired matrix of effective prices for different drugs to different consuming groups. Table 1 presents such a matrix. The absolute price levels reflect our desire to discourage drug use in general. The relative price levels reflect the fact that different drugs have different individual and social consequences. The two different markets reflect the fact that many drugs that are abused have legitimate medical uses that should be preserved.

This description of supply reduction objectives differs significantly from the common view that our supply reduction effort is designed to "enforce the narcotics laws"; or "put dope peddlers in jail"; or "keep all narcotics and dangerous drugs out of the country". The important differences are the following.

First, the objective presented here acknowledges that despite our best efforts, drugs will reach illicit markets. Given an appropriately unyielding commitment to the maintenance of civil liberties, and competing claims for resources, the government is simply unable to mount a supply reduction effort that will keep all drugs from reaching illicit markets. The problem is cast in terms of minimizing the

TABLE 1
The Objectives of a Supply Reduction Strategy
(Illustrative Matrix of Intended Effective
Prices for Different Drugs in Different Markets)

Specific Drugs	Effective Price in Illicit Markets	Effective Price in Legitimate Markets
Heroin	Very High	Not Applicable
Methamphetamine	High	Moderate-High
Amphetamines	Moderate-High	Moderate-Low
Barbiturates	Moderate-High	Low
Cocaine	Moderate-High	Not Applicable
Hallucinogens	Moderate-High	Not Applicable
Minor Tranquilizers	Moderate	Very Low
Marijuana/Hashish	Moderate	Not Applicable

rate at which drugs move to illicit markets (and measuring this effect in terms of availability) rather than stopping all drugs. Clearly, this is a more realistic objective than stopping all drugs.

Second, the objective presented here allows one to think of the variety of instruments beyond "making cases" and enforcing laws that can contribute to supply reduction objectives. In effect, the statement of the objective does not bias the choice of instruments. The roles of regulatory programs, eradication programs, and the development of international institutions to encourage drug control become noticeable. The inadequacy of a policy that focuses solely on drugs that have no legitimate medical use (e.g., heroin, cocaine, and marijuana) and relies only on arrests of traffickers to achieve the objectives is underscored.

Third, the objective presented here makes a virtue of a selective enforcement. We attack the drugs that cause problems and the individuals who currently account for a large fraction of the supply capability. The strict enforcement objective encourages us to go after all violators of the law equally. Loyal pursuit of this strict enforcement objective would dilute the impact of supply reduction efforts. Resources would be wasted on insignificant individuals, and on reducing supplies of more drugs that are relatively less harmful while allowing supplies of more harmful drugs to increase.

III. The Strategic Calculation

Given this perspective on the objectives of supply reduction efforts, how should supply reduction efforts be targeted and resources deployed? The calculation depends on two different judgments. First, one must decide which drugs represent the greatest current or future social costs.⁸ Second, for each drug, one must identify the points in the systems supplying drugs to illicit markets that are relatively vulnerable to attack, the important in determining the rate at which the particular drug moves to illicit markets.

Both judgments are extremely uncertain. The judgment about the relative "costliness" of different drugs is uncertain because we lack reliable information on the current number of illicit users, the distribution of the current users among varying use patterns, the magnitude of the disability associated with each particular drug in each particular use pattern, the shift in total numbers of users and the distribution of use patterns that would occur if a particular drug became more costly. Changes in exogenous factors that will cause

the supply of a given drug to grow or shrink despite explicit supply reduction efforts. The judgment about where to attack production/distribution systems is uncertain because we lack suitable analytic models of these systems—to say nothing of good empirical information to validate the models. Thus, in both areas we are restricted to crude calculations, and uncertain conclusions.

A. A Crude Calculation of Drug Priorities

In making a calculation of the relative importance of the threats presented by different drugs, the White Paper on Drug Abuse has again made a significant contribution (Domestic Council Drug Abuse Task Force, 1975:32-24). I will paraphrase the analysis.

- The major costs of drug use are not drug use in itself, but rather the effects of drug use on an individual's social functioning.
- The combined effects of drug use in itself, current policies to control drug use, and the drug user's own personality and social position result in many drug users experiencing bad health, economic dependence, inability to discharge conventional responsibilities to family and friends, and increased criminal activity.
- The largest component of the drug abuse problem occurs among people who use drugs at chronic, intensive levels. This group is likely to be badly off. Moreover, among this group, drug use in itself is likely to be a relatively important factor influencing the users' status. People using drugs less frequently and for shorter periods are likely to be "better off," and drug use is less likely to be a major factor influencing behavior. Thus, as a crude approximation, the major component of the drug problem will be located among the chronic, intensive users of any given drug.
- By definition, experimentation with dependence producing drugs has a higher probability of resulting in chronic intensive use of the drug than experimentation with a non-dependence producing drug. The implication is that a higher proportion of people using dependence producing drugs will end up in the costly chronic intensive use patterns. This suggests that dependence producing drugs may represent a large share of the current problem, and that any growth in populations using these drugs represent a significant future threat.
- However, the magnitude of the social problem associated with a particular drug also depends on the *absolute size* of the population already using the drug. While the *proportion* of users in socially costly chronic, intensive use patterns will always be greater for dependence producing drugs than for non-dependence producing drugs, the *absolute number* of users in these patterns need not be greater.
- Thus, in gauging the social costs of a particular drug, one must look at three different factors: (1) its dependence producing capabilities; (2) its impact on a user's social functioning at high levels of use; and (3) the current absolute number of users in chronic, intensive use patterns.

Table 2 presents the estimates of these characteristics made by the Domestic Council Task Force on Drug Abuse. Based on these observations, they proposed that drugs be ranked in the following order of priority: heroin; amphetamines and barbiturates (particularly in mixed use or when used intravenously); cocaine; the hallucinogens and marijuana.

While I agree with these priorities, they do not in themselves tell us whether or how we ought to shift our existing allocation of supply reduction efforts. To make this calculation, we need to assess our current performance in affecting the relative prices and availability of the different drugs. Table 3 presents calculations of the cost of a "day long binge" with different drugs.¹⁰ As one can see, the drugs that should attract supply reduction efforts (assuming that there is some

TABLE 2
SUMMARY OF DRUG PRIORITIES

		Dependence Liability	Severity of Consequences		Size of Core Problem
			Personal	Social	
HEROIN		Hi	Hi	Hi	Hi 400,000
AMPHETAMINES	Needle	Hi	Hi	Hi	Hi
	Oral	Low	Med	Med	500,000
BARBITURATES	Mixed	Hi	Hi	Hi	Med
	Alone	Med	Hi	Med	300,000
COCAINE		Low	Low	Med	Low
MARIJUANA		Low	Low	Low	Low
HALLUCINOGENS		Med	Med	Med	Low
INHALENTS		Med	Hi	Med	Low

Source: Domestic Council Drug Abuse Task Force, *White Paper on Drug Abuse* (Washington, D.C.: Executive Office of the President) September, 1975, p. 33.

relationship between supply reduction efforts and observed levels of price and availability in illicit markets) are heroin, amphetamines and barbiturates. It is these drugs whose prices seem absolutely and relatively low compared with our policy objectives.

B. A Crude Calculation About Optimal Points of Attack

Given a decision about drug priorities, the strategic problem becomes the deployment of supply reduction resources against the elaborate production/distribution systems that determine the supply to illicit markets. In the past, this calculation has been dominated by the concept of "source of supply." This concept has proved remarkably useful. When used in the context of the enforcement program, it meant either major traffickers or clandestine laboratories. When used in the context of the international program, it meant countries that produced raw materials or harbored major traffickers. When used in the context of the regulatory program, it meant major points of leakage from legitimate systems. In each context, the different meaning proved appropriate to the task of guiding an organization's efforts.

However, the fact that the concept takes on quite different meanings in different programmatic contexts suggests that it is ultimately ambiguous. Moreover, the difficulty of arbitrating discussions among advocates of crop control, enforcement, and regulatory programs quickly shows that the idea of source of supply cannot resolve the issue of relative emphasis. To resolve this issue, one needs a somewhat more complicated model of the systems that supply drugs to illicit markets.

The basic objective of supply reduction efforts is to reduce the throughput capacity of the systems that supply drugs to illicit markets. The strategic problem is

TABLE 3
Relative Cost of a "Day-Long
Binge" with Different Drugs

Drug	Mode	Amount/Day (Milligrams)	Cost/Day (New York City Retail Price)	Indexed Cost (\$50/Day)
Heroin	I.V.	10-50	\$30-\$150	~ 1.00
Methamphetamine	I.V.	1,000	\$40	~ 0.80
Amphetamine	Oral	150	\$6	~ 0.10
Barbiturates	Oral or I.V.	300	\$1.50	~ 0.03
Cocaine	I.V.	15-100	\$5-\$35	~ 0.20

Source: Lee Minichiello, Institute for Defense Analysis, Unpublished working paper.

to find the specific points in the system which can be attacked, and which, if effectively attacked, would result in large, durable reductions in the rate at which drugs move to illicit markets.

In principle, the array of potential targets is large. One can attack the wholly illicit system, or seek to control diversion from the legitimate system. One can strike at different "factors" necessary for production or distribution such as raw materials, production facilities, finished inventories of drugs, capital destined to be used in establishing distribution systems, or the transactions that knit the entire system together. Within the distribution systems for finished products (or the collection systems for assembling raw materials), one can choose different levels to attack.

The calculation of an optimal portfolio of policy instruments is by no means trivial. We lack both data and analytic models necessary for a sophisticated calculation. Still, it is possible to outline a crude, general procedure for making the calculation, and to make some rough calculations based on current knowledge about major drugs of abuse.

1. Controlling Diversion from Legitimate Systems

The first step in the design of a strategy against any given drug is to plan for the control of diversion from legitimate production/distribution systems. In planning for the control of diversion, one should gauge: (a) the size of the legitimate system compared to the (estimated) size of the illicit system; (b) the degree of concentration (both organizationally and geographically) in the legitimate systems; (c) the stages (and locations) of production/distribution where major leaks currently, or could potentially, occur; (d) the strength of the authority that can be used to control diversion; and (e) the current capability of the institution that will be charged with the control of diversion. These last factors are important because, in many cases, the relevant authority and institution will be those of foreign governments, not institutions within the United States.¹¹ The smaller the legitimate system, the more concentrated the system, and the stronger the

authority and institutions currently devoted to controlling diversion, the smaller will be the necessary investment in instruments to control diversion.

This emphasis on controlling diversion may be puzzling. We are accustomed to thinking of supply reduction efforts as being primarily concerned with attacks on wholly illicit systems. However, it is important to keep in mind that for *all* major drugs of abuse, legitimate production/distribution systems exist that influence the supply of drugs to illicit markets in the U.S. For example, the strategy to control heroin must include efforts to control opium diversion from legitimate production in Turkey and India. The strategy to control barbiturates must deal with the diversion of finished products from retail outlets in the U.S. In fact, the only drugs for which diversion is a trivial problem are cocaine, marijuana, and the hallucinogens. Thus, controlling diversion is generally an important part of a supply reduction strategy.

Moreover, there are several important reasons to take the design of the regulatory program as the *first* step in the design of an overall strategy. First, the control of legitimate systems will be relatively easy to calculate. Since many features of the legitimate system will be known, it will be possible to discover quickly what claims the control of legitimate activities will make on available resources, and where control efforts are likely to fail.

Second, the level of success in controlling diversion will often have a decisive impact on our successes in controlling supplies to illicit markets. This is true simply because the legitimate systems are often very large compared to the illicit system. As a result, small changes in levels of diversion are likely to have dramatic effects on the size of the illicit system.

Third, the volume and type of diversion from legitimate production will have a decisive effect on the structure of the illicit systems that supply illicit markets. If there is diversion of finished products from thousands of geographically dispersed outlets, the illicit distribution system will be widely decentralized with few links among the illicit firms. If there is a diversion of large amounts of raw materials, the illicit distribution system will be much different. It will include production capabilities. It is likely to be relatively concentrated. And the distribution systems will have many different levels. Thus, knowing the characteristics of diversion from legitimate systems will provide important clues about the likely structure of illicit systems.

2. Constricting Wholly Illicit Systems

Given a plan for controlling diversion, an expectation about the volume and locations of continued leakage, and some hunches about the likely structure of the illicit system (based on some inferences about the shape of the expected diversion), one can turn to the second step of the strategic calculation—how best to constrict the capacity of the wholly illicit systems. This calculation should be based on analyses of three different features of the illicit system: (a) the necessary factors of production and distribution that are currently constraining throughput capacity; (b) the existence of a relatively centralized nodes through which a large fraction of the supply destined for illicit markets flows; and (c) the geographic location of the major targets. Again, the last factor is important because it will determine which jurisdiction and which institutions may (or must) be used to mount the attack. In effect, we are looking for “bottlenecks” in the system defined either in terms of relatively centralized pieces of the system, or in terms of necessary factors of production and distribution which are in short supply, and which lie within reach of powerful institutions.

In general, it will be difficult to determine which factors are in short supply. The factors are likely to differ among drugs. And even for a given drug, the factor that is in relatively short supply may change over time. Similarly, it will be difficult to identify the structure of illicit systems. The systems can be more or less

concentrated, more or less vertically integrated, and more or less geographically localized. The uncertainty about the value of the targets created by the structure and processes of the illicit system argues for a diversified strategy. We should strike at a variety of locations to minimize the chance that we miss a major choke point in the system. However, agreement that we need a diversified strategy does not solve the problem of relative emphasis. To decide on relative emphasis, we must make an educated guess about factors that are in short supply and the existence and location of centralized nodes. I would offer two hypotheses as a guide to the design of strategies to constrict wholly illicit supplies.

The first hypothesis is that the factor of production/distribution that is in long run short supply in illicit systems is a factor which we take for granted in analyzing legitimate systems—namely, the ease with which transactions can be completed. Illicit transactions are difficult because they expose participants to substantial risks. Because transactions provide convenient points of penetration for undercover police and bring dealers close to evidence of criminal activity, they increase an individual's vulnerability to investigative efforts. However, the police are only part of the illegal dealer's problem. The other part is criminals who fail to understand the value of “honor among thieves.” Because no courts will enforce illicit contracts, illegal deals are vulnerable to fraud and theft (Schelling, 1967). Thus, both the police and fellow criminals threaten illegal transactions.

To reduce both kinds of threats, dealers invest time and energy in defensive strategies. They screen people who become parties to the transaction. They arrange to have adequate “muscle” to prevent “rip-offs.” They design drop strategies to guard simultaneously against the police connecting them with evidence of the crime and against criminals seizing their money or commodities. And most importantly, they restrict their dealings to people who have proven reliable in the past. Because these defensive actions take time and energy, and constrain the number of people with whom a dealer is willing to make a deal, they make dealers less efficient distributors of drugs, and constrain the aggregate throughput capacity of the system (Moore, 1976).

Simply to observe that transactions are difficult in illicit markets in no way proves that the transaction costs are the major factor constraining the throughput capacity of the system. However, several additional observations tend to support this judgment.

First, in a world where stocks of materials are consumed quickly and holding inventories is unusually dangerous, there will be a large number of transactions. Users purchase drugs several times a day. Retail dealers may replenish their stocks on a daily basis. And even wholesale dealers may make several purchase transactions a week (Moore, 1976). Given the large number of transactions, marginal changes in the difficulty of completing transactions can have a significant impact on the volume of material flowing through the system.

Second, it seems clear that “connections” are rare and exceedingly valuable in illicit markets. Both the existence of the special term, and the frequency with which the term appears in conversations with drug dealers testify to the vital importance of this resource. Since a “connection” describes someone who can easily and reliably execute a transaction, their importance indicates the difficulty of completing transactions. If transactions were easy or “connections” plentiful, connections would not be discussed in such reverent tones.

Third, it is hard to imagine what other factors could possibly be limiting the throughput capacity of illicit systems. Consider, for example, the case of heroin. Since we seize less than 10% of the estimated annual consumption of heroin, it is difficult to believe that the availability of finished inventories constrain supply (Newsday, 1973:162). Since the technology of production is commonly known, relatively simple, and requires only rudimentary equipment, it is difficult to

conclude that limited production facilities constrain supply. And since the drug is sufficiently attractive that many are willing to use the drug when it is readily available, it is hard to believe that demand is currently constraining supply.¹² Thus, having excluded all the familiar hypotheses, the unfamiliar hypothesis seems more likely.

The second hypothesis about illicit systems is that they will tend to become relatively concentrated except in situations where the illicit system can be supplied from small, widely decentralized sources of finished inventories (e.g., retail diversion of amphetamines and barbiturates, or small scale domestic production of marijuana). This conclusion is also based on the difficulty of completing transactions.

Two relatively simple mechanisms can solve the problem of reliable transactions among criminals. One mechanism is for individual criminals to have sufficient prior experience with one another to have revised their estimates of the risks involved, familiarized themselves with the cumbersome security procedures, and to have come to identify their interests with one another. In this situation, each dealer needs only some assurance that the current transaction is not viewed as the last transaction by the other for the transaction to proceed relatively smoothly (Heymann, 1972: 53-62). A second mechanism is to sustain a credible threat of violence if the transaction is betrayed (Schelling, 1960).

It is clear that some groups of dealers develop these capabilities: they will be more or less permanently in the business, and will have developed a significant capacity for violence. Such groups will come to control a large share of the existing market. This tendency towards greater concentration results from two different mechanisms. First, because these dealers will have an absolute advantage in executing transactions, they will gain a competitive advantage as producers, distributors, and transporters of heroin. Second, the capacity for violence, originally developed to prevent betrayals, can easily be used to eliminate competition. Thus, individuals who solve the problem of transactions will eventually control a large share of the market.

Note that this conclusion will not be true for drugs where large amounts of small scale illicit production or small scale diversion are possible. In such systems, it will be hard for powerful organizations to identify and intimidate smaller scale competitors, and relatively easy for new organizations to develop. Consequently, although transactions will continue to be a problem in such systems, this difficulty will not lead to relatively concentrated illicit systems.

If these hypotheses are accurate descriptions of the illicit systems, then several important implications for enforcement strategies follow. In reviewing these implications, it is important to remember that enforcement policies have both *direct* and *indirect* effects on the capacity of illicit systems. The direct effects are arrests of dealers and seizures of drugs. The indirect effects are the incentives created for dealers who remain on the street to use defensive strategies to avoid arrest, but which also reduce their efficiency as suppliers of drugs. In effect, enforcement efforts should be seen not only as removing supplies of material and dismantling some pieces of the pipelines, but also as constricting the pieces of the pipeline that remain in operation. The implications for enforcement strategies are the following.

First, to the extent that relatively large, centralized trafficking organizations control large shares of illicit markets, these organizations represent important targets of enforcement action. Successful arrest and imprisonment of the individuals will have a large and relatively durable direct effect on the capacity of the illicit system. However, these organizations will not always exist in illicit markets. If inventories of drugs are available from many, small dispersed sites, the illicit distribution system will be correspondingly decentralized. In this world, there

may be no significant direct effects of enforcement action unless police activity reaches a very impressive scale.

Second, it is likely that the *indirect* effects of enforcement will be as important as the *direct* effects in curtailing available supplies. The indirect effects of enforcement efforts are to make transactions exceedingly complicated. To the extent that the police use undercover police and informants, they contaminate the pool of potential associates and force dealers to be surreptitious in executing transactions. Since transactions are difficult even without active police interference, and since the threat of interference makes the transactions still more complicated, the indirect effects of enforcement efforts are likely to be significant (Moore, 1976).

Third, it is possible that we currently *undervalue* (though not necessarily *underinvest* in) large volume arrests of relatively low level dealers. If the transactions of thousands of low level dealers can be reduced by the threat of arrest, there may be a substantial impact on the through-put capacity of the system. In addition, the defendants produced by the large number of arrests may provide the information necessary to make cases against higher level dealers. Thus, low level arrests can produce a significant independent effect on the capacity of the illicit system, as well as provide resources that are valuable in making higher level arrests.

Fourth, it is apparent that the potential scope of enforcement action against illicit systems depends partly on the success of strategies to control diversion. If the programs to prevent diversion succeed in cutting off many small leaks, the structure of the residual illicit system will be vulnerable to enforcement action. If these control programs fail, the enforcement effort will have no large targets to attack and will depend primarily on the indirect effects of motivating dealers to be cautious.

Thus, enforcement action has the general effect of making transactions difficult. Moreover, to the extent that enforcement efforts are targeted on and successfully disrupt the organizations that seem to have solved the transactions problem, they force all dealers to have to deal with the transactions problem. If transactions are a major constraint, and if police actions work to tighten this constraint, then enforcement action will be effective in reducing the throughput capacity of the system.

IV. Strategic Aspects of the Systems Currently Supplying Major Drugs of Abuse

The priority drugs differ in terms of the strategic aspects outlined above. As a result they present different kinds of control programs, and require different kinds of capabilities from federal drug control organizations. Brief descriptions of the systems supplying the different drugs and tentative conclusions about requirements for effective control are described below.

A. Heroin

Heroin is a problem of foreign raw materials. The effective control of raw materials depends partly on controlling diversion from legitimate production in Turkey, and partly on eradicating illicit production in Mexico and Southeast Asia. Unfortunately, it is difficult to achieve levels of control in these areas that will result in long run shortages of raw materials. Part of the problem, of course, is the limited capabilities and commitments of the foreign control agencies. However, a more important problem is the very small amount of raw materials necessary to supply the U.S. illicit market for heroin. The U.S. market can be supplied by fields occupying less than 5 square miles, or by diverting less than 1% of the legitimate world production. Even if the foreign control agencies were very good and very strongly committed to control objectives, they would have difficulty achieving the necessary scale of operations. These observations do not necessarily imply that

sudden, large scale attacks against raw materials will fail to affect supplies. Indeed, it seems clear that the Turkish opium ban and the herbicidal attacks on Mexican fields have affected the availability of heroin. It implies only that *in the long run*, raw materials will not be a major constraint.

Controlling the processing of opium into heroin presents similar problems. The processing techniques are fairly widely known and relatively simple to manage. The processing requires only small amounts of commonly available equipment. And most processing occurs in foreign countries. Thus, seeking to constrain supplies of heroin by destroying labs or arresting chemists runs into the same problems as seeking to control raw materials—it is hard to achieve a scale of enforcement effort that is large relative to the capacity of the system to restore the lost capability.

Concentrating on seizures of heroin seems equally fruitless. Currently less than 10% of the estimated illicit heroin consumption is seized. While the seizures may produce temporary local shortages, or achieve longer run effects by disrupting the finances of trafficking organizations, the independent effects of the seizures are not likely to be important in constraining the total supply.

The most vulnerable components of the heroin system are likely to be a small number of relatively large, centralized trafficking organizations, and the transactions of smaller, less organized groups who distribute heroin. The attack on these components of the system depends on two different kinds of enforcement activity.

One kind of activity is making cases against low level dealers with a combination of patrol and inexpensive investigative strategies. This activity includes arrests by patrol forces at the border, arrests by local patrol forces in urban areas, and arrests made through relatively short-term undercover operations conducted by state, local and federal enforcement agencies. These activities, if maintained at an appropriate scale, put enormous pressure on the transactions of disorganized dealers. In addition, these activities provide a resource that is extremely valuable in conducting investigations of the relatively more cautious and centralized organizations—namely an informant.

The investigations against the relatively centralized organizations are the second kind of enforcement activity. The investigations usually depend on conspiracy investigations, or more extended undercover investigations. The effects of these investigations are not only to put pressure on the transactions of well organized dealers, but also to immobilize substantial pieces of the illicit distribution system through arrest, prosecution and imprisonment. The key capabilities required for such investigations are: 1) high quality informants; 2) agents who are capable of developing elaborate conspiracy investigations; or conducting extended undercover investigations; 3) effective intelligence systems that allow the agents to guide the informants in developing the cases; and 4) an international jurisdiction maintained through close liaison with local police agencies in both the U.S. and foreign countries.

In sum, in the long run, the effective control of heroin is likely to depend on maintaining a high level of enforcement effort against all levels of the distribution system. Attacks directed at lower levels of the distribution system (or at disorganized, smaller firms at high levels) make transactions difficult and produce defendants who are valuable in making cases against the larger, more organized firms at higher levels. Moreover, these attacks can be mounted easily by state and local police, by federal border control agencies, and by federal investigative agencies relying on short term undercover investigations. Attacks directed at larger, more organized firms at higher levels can produce large, direct reduction in the throughput capacity of the system. These attacks must be mounted by a federal investigative agency with sophisticated investigative capabilities, and a large jurisdiction maintained by close liaison with foreign police, state and local police, and federal border control agencies. In addition, these enforcement efforts are

aided by the successful control of raw materials. In the short run, large scale attacks on raw materials can produce significant shortages and curtail supplies to illicit markets. In the long run, successful control of raw materials implies that enforcement agencies will face some relatively large, centralized trafficking networks.

B. Amphetamines

The characteristics of the systems supplying amphetamines to illicit markets are less well known. Analyses of undercover purchases by federal agents indicate that approximately 40% of the amphetamines represent diversion from legitimate, domestic production of amphetamines (Minichello *et al.*, 1974:45). The remaining 60% comes from a combination of illicit domestic production, and foreign production (both legitimate and illicit) which is illicitly imported to the U.S.

The control of the 60% that is illicitly produced or imported must be controlled in much the same way as heroin. Successful control of raw materials and processing capabilities is elusive because the needs are small, the required precursors and equipment are common and used for many legitimate purposes, and the technology is relatively simple. In addition, to a great extent one must rely on foreign institutions both to control diversion and to make cases against illicit producers and distributors. Thus, attacking transactions with local police, federal border control agencies, and federal investigative agencies may be the only instrument that constrains illicit systems.

Unfortunately, diversion from legitimate production complicates the situation. It is not clear at what level the diversion occurs. However, several facts indicate a major problem with retail diversion. First, the brand name drugs appear in illicit markets in proportions roughly equivalent to their share of the legitimate market (Minichello *et al.*, 1974:60). If the illicit market was supplied by the diversion of large amounts of drugs from the manufacturing level, one would expect some brands to be significantly over-represented. Second, an experiment conducted by DEA indicated that retail dealers are exceedingly vulnerable to fraudulent purchases. A large fraction of fraudulent prescriptions presented to a random sample of druggists were filled without question.¹⁴ Third, it is apparent that retail diversion can support relatively large, local epidemics of drug use. DuPont and Greene have documented an epidemic of stimulant abuse in Washington, D.C. and traced it to a handful of over-prescribing physicians (DuPont and Greene, 1974:653-662). Thus, there is no evidence which is inconsistent with the hypothesis that much of the diversion comes from retail levels.

The existence of significant diversion from wholesale and retail levels creates several major problems for the successful control of amphetamines. First, resources must be diverted from enforcement actions against illicit production and importation to control the domestic diversion. Second, the diversion guarantees that the illicit system will be dispersed—many small units will be in operation. This implies that enforcement must rely primarily on the indirect effects of making transactions difficult. There are no large targets to immobilize. Third, since much of the authority for controlling retail diversion lies with state and local governments, the drug control effort must rely on their commitment and capabilities. So far, these capabilities have not been great.

In sum, amphetamines represent a very difficult control problem. In the short run, the best chances for more effective control are likely to include more effective enforcement against supplies from Mexico, stricter national production quotas to keep legitimate pipelines lean, and larger state and local efforts against retail diversion. But even with significant improvement in their areas, amphetamines will continue to be a major problem.

C. Barbiturates

As in the case of amphetamines, our knowledge of the systems supplying barbiturates to illicit markets is relatively thin. Analyses of federal undercover purchases indicate that illicit markets are supplied almost entirely by diversion from domestic legitimate production (Minichello *et al.*, 1974:48-49). The largest portion of the illicit supplies seem to be produced in foreign countries and imported illegally into the U.S. Only a small fraction of the barbiturates encountered in illicit markets appear to be illegally produced. The explanation for the relatively small role of illicit production may be simply a slightly more esoteric and difficult production process. Unfortunately, there are few clues about the major points of diversion from legitimate systems. Consequently, the best strategy against barbiturates in illicit markets is a generally strengthened regulatory program: tighter quotas, more effective policing of producers and wholesale distributions by federal agencies, and additional controls over retail distribution by state and local authorities.

V. Conclusions: Performance Requirements and Gaps

Given these observations, what can be said about the requirements for an effective supply reduction effort? How does our current institutional capability measure up to the requirements? I would offer three major conclusions.

First, it is apparent that a successful supply reduction strategy depends on a variety of specialized capabilities. We need police who can make cases through a variety of tactics including general surveillance, undercover operations, and retrospective conspiracy investigations. We need regulatory officials who can establish production and import quotas based on reasonable estimates of "legitimate medical need," promote voluntary compliance within the drug industry and self-restraint among prescribers and patients, and conduct investigations and apply sanctions against non-compliant firms. We need diplomats capable of managing relations with foreign governments to insure that drug control remains a high priority objective, that the authority and institutions to control legitimate and illicit supplies continue to be strengthened, and that the foreign police cooperate with U.S. police at a tactical level. Finally, we need "domestic diplomats" to motivate and equip state and local governments to shoulder their responsibilities to control retail diversion from legitimate systems, maintain large scale enforcement efforts against the priority drugs, and to cooperate with federal agencies at both strategic and tactical levels.

That we need these diverse capabilities is largely the result of the diversity of the control problems represented by the current high priority drugs. If the drugs presented similar control problems, we might be able to get along with more limited capabilities.

The need to develop and coordinate such diverse capabilities poses a significant organizational design problem.¹⁵ One strategy would be to create a single large organization with many different "professions" represented in the organization. An alternative strategy is to create separate organizations for each required "profession," and then invest in "coordinating mechanisms" that fall short of giving authority over the entire operation to a single administrator. Each strategy has problems. The "single organizational strategy" emphasizes coordination at the risk of stunting the development of the various professions. The "many organization strategy" may insure the development of the various professions, but also guarantees that resources cannot be quickly adjusted as the control problems change, that most serious problems of operational coordination will be unresolved, and that no single organization will be accountable for the success or failure of the strategy. Thus, there is no panacea: because the task is complex, the supply reduction strategy will continue to be organizationally complex.

The current organizational structure created by Reorganization Plan #2 of 1973

represents a reasonable compromise. A single agency (the Drug Enforcement Administration) exists which includes within it many, but by no means all, of the required capabilities. It is expected to deploy and use its own resources effectively, and to achieve a large proportion of the potential benefits of a supply reduction effort. In addition, it is expected to be a "lead agency"—more committed than other agencies to the success of supply reduction efforts, lobbying other agencies hard to keep drug control high in their priorities, and sufficiently capable and prestigious to assign roles and strengthen the capabilities of other agencies in overall drug control efforts.

Unfortunately, as of 1977 the promise of this structure had not yet been realized. The problem seemed to be DEA's failure to develop the high status and diverse professional capabilities that would allow it to emerge as a significant organizational force. It was mired in narrow views of its responsibilities, internal struggles, and misguided external attacks. In order for the structure to come alive, the following capabilities have to be created and sustained within DEA: 1) a powerful planning and evaluation staff which can establish DEA's credibility and increase its capability to assign roles to other agencies; 2) a large and more visible regulatory program staffed by people of sufficient stature to command the respect of legitimate drug industries; 3) a foreign program staffed with people who recognize their role as builders of institutions rather than case-makers; and 4) a strong liaison function to state and local police within the enforcement programs. Until personnel systems and budget allocations are shifted to promote these capabilities, the promise of the organizational structure will continue to go unrealized.

Second, it seems clear that the major requirement for successful action against supplies of heroin is a capacity to immobilize major trafficking organizations. Our success in immobilizing trafficking organizations depends, in turn, on (1) the total number of defendant/informants; (2) the skill with which valuable leads are screened from less valuable leads among the thousands of possibilities; and (3) the techniques and skills employed in developing the case. This implies that success in controlling heroin requires the various enforcement organizations to produce large numbers of defendants; to evaluate these informants in the context of a comprehensive intelligence system; to use the valuable informants in jurisdiction where their information has the greatest value; and to select tactics for developing cases from the full set of investigative techniques. If the program is constrained in terms of available information, jurisdiction, or investigative techniques, some fraction of the potential for development will be lost.

It is probably fair to say that the most important constraints on our ability to make cases against major heroin traffickers in 1977 were: (1) relatively limited cooperation between DEA (which is the organization in the best position to develop cases), and the variety of organizations that produce large numbers of defendant/informants (e.g., Customs, the Immigration and Naturalization Service, and state and local police); (2) limited intelligence capabilities within DEA for screening and guiding defendant/informants; and (3) limited capabilities to make conspiracy cases within DEA. At that time, DEA had had difficulty establishing cooperative relationships with other enforcement agencies, had failed to invest adequately in intelligence systems to support enforcement operations, had failed to create an organizational structure that facilitated cooperation between intelligence analysts and agents, and had failed to develop personnel systems to select, train, and motivate agents to make complicated conspiracy cases. Having levelled these criticisms at DEA, I should hasten to point out that I think similar criticisms apply to DEA's major competitors as well. Neither Customs nor the FBI was then or is now equipped to mount major conspiracy investigations against narcotics traffickers from a broad base of close relations with other police agencies. More-

over, the situation may have improved significantly. At any rate, the main point is that the development of these specific investigative capabilities *somewhere* in the federal government is the key to successful, long run control of heroin.

Third, improved control of amphetamines and barbiturates depends critically on a strengthened regulatory program. "Strengthening" here is *not* likely to mean additional resources. Additional resources can only be used to increase the frequency with which manufacturers and wholesale distribution can be inspected for compliance with security and record keeping requirements. Such actions may be targeted at relatively unimportant sources of diversion, and may fail to close the leaks. More important regulatory actions are to promote restraint among prescribers and patients, to shrink legitimate production through tighter quotas, and to strengthen the authority and institutions that control retail diversion. These actions depend on developing substantial *political* power behind the regulatory program. Since the behavior of many people must be affected, and powerful interests must be opposed, there is no substitute for developing widespread public concern about the problem.

These observations suggest some significant problems with our current supply reduction strategy. However, they are not problems with the organizational structure. They are problems with the performance of the most important organizational unit. The cure is to maintain high quality management within DEA, increase its flexibility in personnel and resources allocation decisions, and then support the organization for the 5 to 10 years it will take to develop the complicated mix of capabilities it needs to do its job well.

NOTES

1. For stimulating discussions of these issues; see John Kaplan, "The Role of the Law in Drug Control," *Duke Law Journal* 1971:1065; and "Drugs and Freedom: A Transcript of a 'Firing Line' Conversation Between William Buckley, Jr. and Thomas Szasz," Southern Educational Communication Association, May, 1973.

2. For critiques of federal supply reduction strategies on efficiency grounds see the following reports by the General Accounting Office: "Heroin Being Smuggled into New York City Successfully," B-164031(2), 1972; "Efforts to Prevent Dangerous Drugs from Illicitly Reaching the Public," B-175425, 1972; "Difficulties in Immobilizing Major Narcotics Traffickers," B-175425, 1973; "Identifying and Limiting Sources of Dangerous Drugs: Efforts Being Made, But Not Enough," B-175425, 1974; "Efforts to Stop Narcotics and Dangerous Drugs Coming From and Through Mexico and Central America," B-175425, 1974. See also the following Congressional documents: "Law Enforcement on the Southwest Border" Hearings Before a Subcommittee of the Committee on Government Operations, U.S. House of Representatives, 93rd Congress, 2nd Session, July 10, 11, 16 and August 14, 1974; "Federal Drug Enforcement: Parts 1, 2, 3," Hearings Before the Permanent Subcommittee of Investigations of the Committee on Government Operations, U.S. Senate, 94th Congress, 1st Session June and July, 1975.

3. Direct Federal expenditures for drug control actions in Fiscal Year 76 are currently estimated at \$323 million. See The Strategy Council, *Federal Strategy for Drug Abuse and Drug Traffic Prevention*, Washington, D.C.; Government Printing Office, 1975, p. 97.

4. The basic reason for this conclusion is that enforcement actions will fail to deter transactions among close friends and relatives, and nearly everyone living in areas where drug use is endemic will have a close friend or relative who uses drugs. For a more detailed discussion of this issue, see Mark H. Moore, *Buy and Bust: The Effective Regulation of an Illicit Market in Heroin*, Lexington, Mass: D.C. Heath and Co., 1976, Chapter 6.

5. I do not mean to imply by this observation that all of the attitudes, behaviors, and conditions we observe in drug users are the direct result of drug use.

It is quite clear that the behavior and condition of drug users are affected by a great many factors other than drug use. Indeed, it is likely that *most* of the observed behavior and condition is a result of individual personality, social opportunities, and the policy instruments we use to control drug use rather than drug use in itself. However, I do believe that there is a general effect of drug use (that occurs partly as a consequence of the drug in itself and partly as a result of interactions among the drug in itself, prior personality, and social contingencies); that these effects register on a variety of different attributes of the users' life; and that the importance and adverse nature of these effects increase dramatically as levels of use change from sporadic, casual use to chronic intensive levels of use. Moreover, I believe that drugs differ in two important respects: *at any given level of use*, drugs differ in terms of their impact on a user's life (e.g., sporadic consumption of hallucinogens poses different threats than sporadic consumption of marijuana; high levels of amphetamines use differ from high levels of heroin use); drugs differ in terms of the chance that casual users will advance to chronic intensive levels of use (i.e., their dependence producing capability).

The idea here is that we have preferences about the size of relative differences as well as absolute levels. In effect, we might easily prefer 25% increase in the effective price of heroin and no increase in the effective price of marijuana to a 15% increase in the effective price of both.

7. Mark H. Moore, "Policies to Achieve Discrimination on the Effective Price of Heroin," *The American Economic Review*, 63:2, May 1973. This article introduces the concept of "effective prices." In addition, it suggests that there is an additional distinction worth making in some markets—the distribution between people already using the drug at high levels, and those who are just experimenting. The distinction is relatively easy to draw and very important for dependence producing drugs; less easy to draw and less important for non-dependence producing drugs.

8. The extent to which one separately targets on specific drugs is uncertain. The major problem is that distribution systems overlap: illicit heroin dealers may also deal in cocaine; legitimate producers and distributors of barbiturates may also produce or distribute minor tranquilizers. Consequently, it is difficult to attack one drug without attacking several. A second problem applies only to criminal enforcement. Since one has important information about current targets of enforcement efforts, and since it is not clear to whom current targets might ultimately lead, it is often uncertain which drugs are being attacked. These problems guarantee that our capability to target narrowly on specific drugs will be limited. However, it is uncertain exactly how crippling the problems are.

9. Important external factors affecting the supply of drugs that are almost certainly beyond our policy control are things such as weather, local wars, interruption in trade or transportation among countries, etc. Factors which are only indirectly under federal policy control include the policies of other governments towards narcotics and dangerous drugs.

10. It is not obvious how one should compare the cost of the various drugs. What constitutes a comparable "dosage unit" is not at all clear since there are no medical uses of some of these drugs. Since our ultimate interest is in reducing the number of days in which a person is dysfunctional as a result of drug use, the cost of a day-long binge seems like a useful unit.

11. Perhaps the most notable example is the control of poppy cultivation in Turkey.

12. The most compelling evidence of the attractiveness of heroin comes from the Vietnam experience. Fully one-third of the U.S. soldiers in Vietnam used opium or heroin while there. While one can argue that the large demand was the result of the strain induced by the War, it seems more likely to me that easy availability was the key factor. See Lee N. Robins, "The Vietnam Drug User Returns," Special Action Office Monograph, Series A, No. 2 (May 1974).

13. Also personal communication with Lee P. Minichello.

14. Dr. Albert Glass, Drug Enforcement Administration, Washington, D.C. Personal communication.

15. For a closer analysis of the organizational design problem and a review of past efforts, see Mark H. Moore, "Re-organization Plan No. 2 Reviewed." Unpublished manuscript, 1976.