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The British Gas Suicide Story and Its Criminological Implications

ABSTRACT

Between 1963 and 1975 the annual number of suicides in England and Wales showed a sudden, unexpected decline from 5,714 to 3,693 at a time when suicide continued to increase in most other European countries. This appears to be the result of the progressive removal of carbon monoxide from the public gas supply. Accounting for more than 40 percent of suicides in 1963, suicide by domestic gas was all but eliminated by 1975. Few of those prevented from using gas appear to have found some other way of killing themselves. These findings suggest that suicide is an intentional act designed to bring an end to deep, though sometimes transient, despair, chosen when moral restraints against the behavior are weakened and when the person has ready access to a means of death that is neither too difficult nor repugnant. This view of suicide has implications for its prevention and, by analogy, for the prevention of crime. That blocking opportunities, even for deeply motivated acts, does not inevitably result in displacement has not been so clearly shown before, and the demonstration considerably strengthens the case for opportunity-reducing or "situational" means of crime control.

A few years ago, a proposal to erect an antisuicide barrier on San Francisco's Golden Gate Bridge is said to have been defeated through the combined opposition of environmentalists and psychiatrists. The

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former objected to the barrier's unsightliness; the latter said that potential suicides would find other ways to kill themselves, with no net saving in lives. Whatever the merits of the environmental position, the recent 35 percent drop in Britain's national rate of suicide suggests that the psychiatric objections were misplaced. It is now clear that this remarkable decline in suicide was brought about by removal of carbon monoxide from the domestic gas supply during the period. This was a by-product of the search for cheaper forms of gas and resulted from two separate developments: first, the adoption of new manufacturing processes for so-called town gas and, later, the wholesale replacement (between 1968 and 1977) of town gas by natural gas from the North Sea. Natural gas is free of carbon monoxide, and some of the new town gases contained as little as 2–7 percent carbon monoxide, whereas older town gas contained around 8–16 percent carbon monoxide. This means that, after being at highly lethal levels until the beginning of the 1960s, carbon monoxide was almost eliminated from the domestic gas supply by 1975. The decline in toxicity was accompanied by a fall in the number of gas suicides. Although these accounted for almost half of all suicide deaths in England and Wales in 1960, gas suicides had virtually disappeared by 1975. Faced with fewer opportunities to use gas, few potential gas suicides found some other way of killing themselves.

These facts have important implications for the prevention of suicide and, as long as the analogy with crime holds, also for the prevention of crime. If opportunity determines not merely the time, place, and method but the very occurrence of a behavior that is usually seen to be the outcome of strong internal motives, the same is likely to be true of crime, most of which seems less deeply motivated. That few people found other ways of killing themselves is especially instructive in that similar evidence of lack of displacement is difficult to obtain in the criminological field. The gas suicide story therefore considerably strengthens the case for opportunity-reducing, or "situational" (Clarke 1983), measures of crime prevention. Moreover, it suggests that the common assumption that criminality has drive-like properties may be false, supporting the need for theory that takes due account of both the objective and the subjective components of opportunity. This need may be filled by the recently developed decision-making or rational choice theories of crime (for reviews, see Clarke and Cornish [1985], and Cornish and Clarke [1986]).

Section I briefly introduces the situational approach to understanding crime and designing preventive measures and discusses the empir-

ical and theoretical importance of displacement. Section II tells the British gas suicide story. It presents the statistics for gas and other suicides for the relevant period in relation to the reduced levels of carbon monoxide in the gas supply and discusses alternative explanations for the decline in suicide and seeming inconsistencies in the evidence. Section III considers the apparent reluctance of many who study suicide to accept the gas detoxification hypothesis and develops the argument for a revised theory of suicide similar to rational choice theories of crime. Section III concludes with an examination of the scope for preventing suicide through physical reduction of opportunities. Section IV considers the criminological implications of the gas suicide story, in particular, those for situational prevention. Improved understanding of the limits of crime displacement should allow research to address some other impediments to the development of situational measures; these include practical and ideological objections as well as a lack of understanding concerning the relation between the criminal opportunity structure and offender decision making.

I. Situational Crime Prevention and the Displacement Hypothesis

Situational crime prevention consists of measures that are directed at highly specific forms of crime, that involve the management, design, or manipulation of the immediate environment in as systematic and permanent a way as possible, and that therefore reduce the opportunities for crime and increase its risks as they are perceived by a wide range of offenders (Clarke 1983). These measures include various forms of target hardening to make the objects of crime less vulnerable (e.g., vehicle steering column locks, passenger and baggage screening at airports, check guarantee cards, and entry phone systems for apartment blocks), defensible space architecture (which encourages residents in housing projects to exercise territorial surveillance of the public space outside their dwellings), community crime prevention initiatives (e.g., neighborhood watch and citizen patrol schemes), and a number of less easily categorized measures such as improved coordination of public transportation with pub closing times or more sensitive public housing allocation policies that avoid the concentration of children in particular housing developments. The conceptual underpinning for situational prevention is provided both by criminal opportunity theory (Cook 1986), which draws attention to the role of the nature and distribution of criminal opportunities in the genesis of crime, and by choice or

decision models of crime, which seek to explain how the offender perceives, evaluates, and acts on the opportunities that exist (Clarke and Cornish 1985). The situational approach to prevention can be contrasted with "social prevention" that seeks—though with little demonstrated effect (Morris and Hawkins 1970; Wilson 1975)—to ameliorate the social, psychological, economic, and educational deficiencies that are thought to give rise to criminal dispositions.

Despite the successes in practice of situational crime prevention (e.g., Clarke 1983; Heal and Laycock 1986), it has proved vulnerable to theoretical criticism, particularly concerning the presumed inevitability of displacement: in response to blocked opportunities or increased risks with respect to a particular offense, it has been thought that an offender would simply commit it elsewhere, choose a different time, target, or victim, change his modus operandi, or turn to some completely different form of crime (e.g., Reppetto 1976; Gabor 1978). The concept of displacement is consistent not just with the view of offenders as generalists rather than specialists but also with the prevailing "hydraulic" (Gabor 1981) or "dispositional" (Clarke 1980) view of criminal motivation, whereby the offender is regarded as being driven to commit crime as a result of his biological inheritance, maladaptive personality, unfortunate upbringing, or unfavorable social environment. This view of crime has its conceptual roots in drive theories of motivation, such as those of Dollard et al. (1944), Freud (1955), and Lorenz (1966), which depict behavior as being largely governed by the necessity of reducing tensions created by the organism's internal needs. Parallel mechanisms are seen to undermine preventive or treatment efforts in some other fields: in psychiatry, the concept of "symptom substitution," which refers to the appearance of fresh symptoms of a neurotic disorder following on the eradication of earlier ones; in accident prevention, the concept of "risk homeostasis" or "danger compensation," under which, for example, the development of safer cars is said to lead to more reckless driving (Orr 1984; Adams 1985); and in the addictions field, the concept of "escalation," which refers to the supposed need of addicts to move on to more powerful drugs when those they are using no longer satisfy their cravings.

Displacement has often been demonstrated—for example, the introduction of steering column locks for new cars displaced theft to older, unprotected vehicles in Great Britain (Mayhew et al. 1976), while a police "crackdown" on subway robberies in New York City displaced robberies to the street (Chaiken, Lawless, and Stevenson

1974). But there are also many well-known examples of reductions in specific forms of crime apparently having been achieved through situational measures. For example, the fitting of steering column locks to all cars in West Germany in 1963 brought about a 60 percent reduction in car thefts (e.g., Mayhew et al. 1976), and a variety of security measures dramatically reduced airliner hijackings in the early 1970s (Wilkinson 1977). Unfortunately, in these and similar cases it is difficult to be sure that there was no displacement of offending to some other kind of crime because the reductions achieved were small and easily concealed within overall, and generally rising, crime statistics. It is the unambiguous nature of the evidence concerning the lack of displacement to other means of death following detoxification (and the fact that thousands of lives were thereby saved) that makes the gas suicide story so potentially important in evaluating the scope of situational preventive measures.

II. Domestic Gas and Suicide in England and Wales, 1968–83

The data presented below are limited to England and Wales. While gas detoxification also had its effect in Scotland, procedures for determining suicide are different there, the statistics are kept separately and not in quite the same form, and the changes in the gas supply took place at different rates and at slightly different times (Kreitman 1976; Clarke and Mayhew 1987).

A. General Features of Suicide in England and Wales

International comparisons are beset with difficulties, but the suicide rates of England and Wales have always appeared low compared with those of many other similar countries such as France, Germany, Austria, Switzerland, and Scandinavia (Stengel 1964). As in most countries, suicide in England and Wales is powerfully related to sex and age: there are three male for every two female deaths and about twice as many deaths of those aged 55–64 as of those aged 25–34 (Adelstein and Mardon 1975).

Until detoxification of gas at the beginning of the 1960s, the suicide rate for men had been relatively steady during this century, though with a peak in the depression years and troughs during the two world wars. These war-related declines are comparable in magnitude to the declines following detoxification of gas, though they may be recording artifacts (Farmer 1980). For women, the picture is one of a fairly steady increase in suicide during the period with less change in the Depression

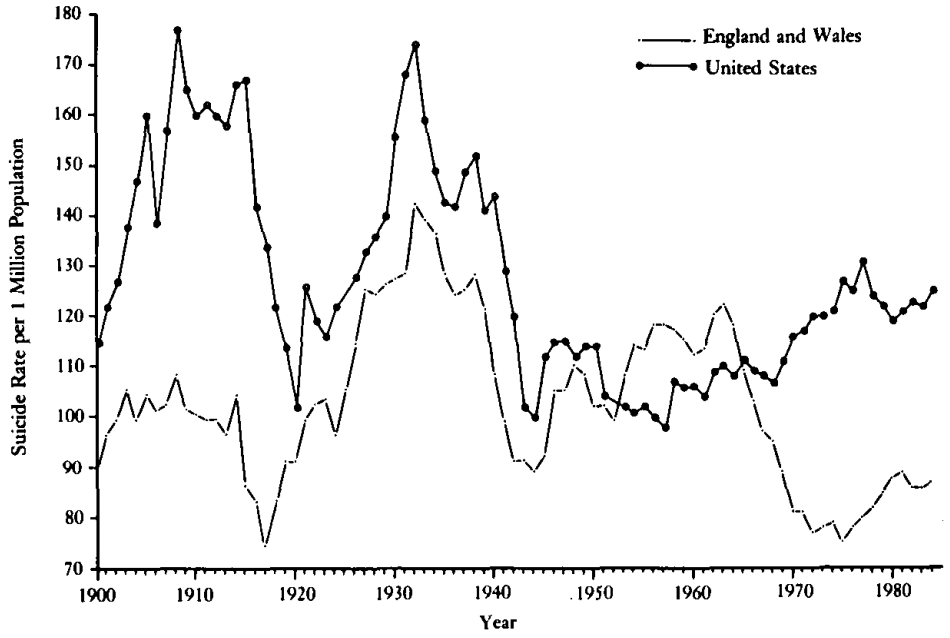

FIG. 1.—Crude suicide rates (per 1 million population) for England and Wales and the United States, 1900–84. Sources: Registrar General (1900–40); U.S. Department of Commerce (1901–85); Office of Population Censuses and Surveys (1985).

and war years. Figure 1 shows crude suicide rates (i.e., uncorrected for changes in population structure) during the twentieth century for England and Wales and, for purposes of comparison, for the United States.

From 1963, as will be shown in more detail below, rates of suicide for both men and women in England and Wales declined markedly until the mid-1970s. Only Scotland and Greece among eighteen European countries studied by Sainsbury, Jenkins, and Levey (1980) showed similar, though less pronounced, declines. Since the mid-1970s, female suicides in England and Wales have declined further, whereas those for males have risen, though not yet to the levels of the early 1960s (for commentary on long-term trends in suicide in Britain, see, e.g., Adelstein and Mardon [1975], Farmer [1979], and Low et al. [1981]).

Detoxification of gas has changed the distribution of different methods of suicide considerably, as figure 2 shows. For example, in 1960, suicides by domestic gas accounted for, respectively, just under and just over half of all male and female suicides; but by 1980, only 0.2 percent of all suicides were committed by this method. The most frequently used method of suicide in 1980 for men was hanging (including strangulation and suffocation), which accounted for nearly a third of deaths; hanging was followed by poisoning with solid and liquid sub-

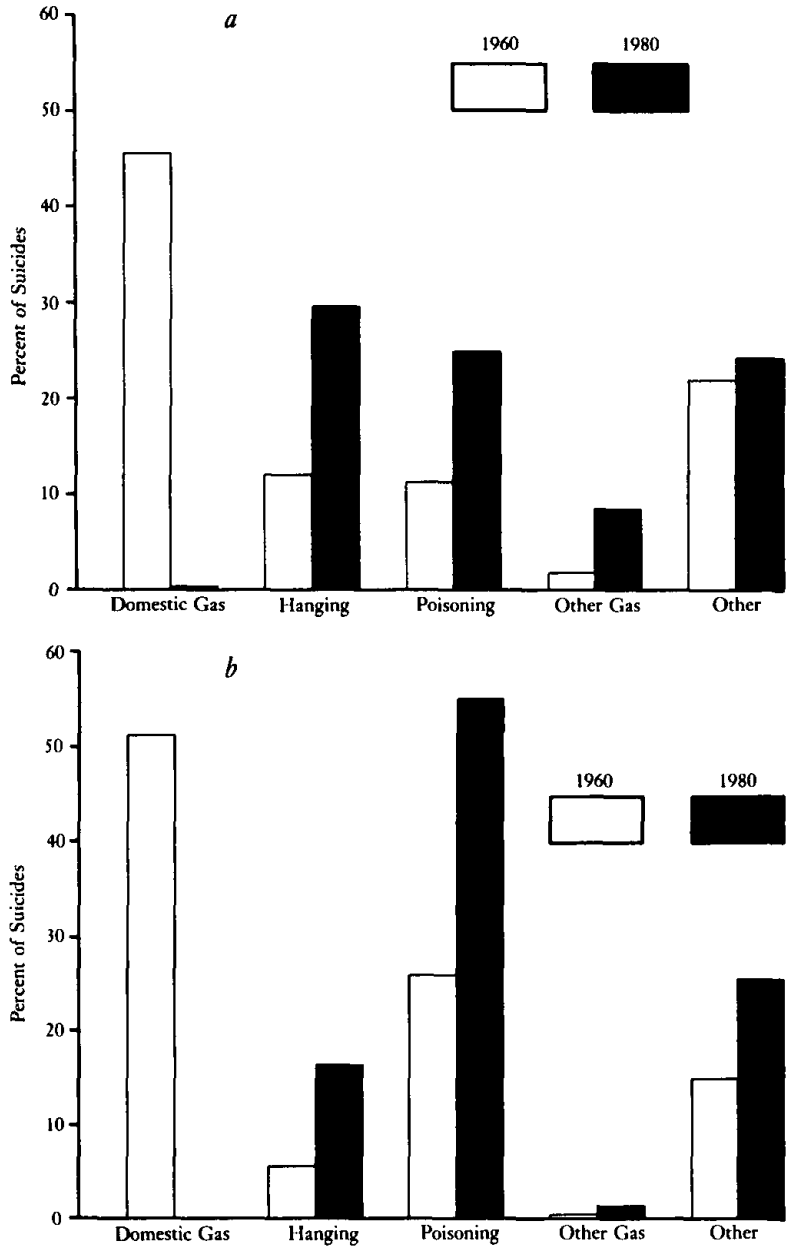

FIG. 2.—*a*, Changes in methods of suicide for males in England and Wales, 1960–80. *b*, Changes in methods of suicide for females in England and Wales, 1960–80. Source: Bulusu and Alderson (1984).

stances, which accounted for nearly one-quarter of deaths (fig. 2*a*). Poisoning by gases other than ones in domestic use (mostly car exhaust fumes) accounted for roughly a further 17 percent of the total male suicides. There was little change during the period, however, in the proportion of suicides using a variety of other methods such as cutting, shooting, drowning, and jumping.

The picture for female suicides in 1980 was quite different (fig. 2*b*). Women rarely used car exhaust gases (less than 3 percent of female suicides were by this method), while they used hanging and suffocation only about half as often as men. The commonest method of suicide for women in 1980 (54.3 percent of deaths) was poisoning by solid or liquid substances, most of which were painkillers, barbiturates, tranquilizers, and antidepressants (Bulusu and Alderson 1984).

In contrast to the situation in the United States, where gun suicides account for about 55 percent of the total (Lester 1984), firearms are much more rarely used in England and Wales (about 8.1 percent of male suicides and 0.4 percent of female suicides [Bulusu and Alderson 1984]).

B. Detoxification of Domestic Gas

Following nationalization of the British gas industry in 1949, an extensive program of modernization was begun: more than 600 of the old and inefficient local gas works were closed, and many of the larger works were extended and linked together by a new system of mains (Williams 1981). A program of research was also initiated to find more economical ways of manufacturing gas, which, at that time, was derived mainly from high-quality and increasingly scarce coal. These coal-based gases contained high concentrations of carbon monoxide (CO), and it was the search for economy that resulted in detoxification, the first stage of which began in the early 1950s. At that time, less toxic gases that were the fruits of the new production processes utilizing oil and petroleum as well as cheaper coals began to be mixed with the existing gas. The average CO content of the public gas supply in Great Britain gradually declined, with minor fluctuations, from a high of about 13 percent in the late 1950s to about 7 percent in 1968 (Kreitman 1976), the year the second major change began to take effect. This was the replacement of manufactured "town" gas by the then recently discovered natural gas from the North Sea. Natural gas consists largely of methane and is nonpoisonous. Because its combustion properties are different from those of manufactured gas, the two cannot be mixed, and natural gas had to be introduced area by area, as consumers' appliances were converted to burn natural gas. This massive conversion program, involving some 13.5 million consumers and 35 million appliances, took nine years and was completed in September 1977 (Elliott 1980).

While these changes were not motivated by the need to improve

safety, the side benefits of reduced toxicity were not wholly unanticipated. For example, an official government report (Morton 1970) on the increased risks of undetected leaks and explosions associated with the use of natural gas did comment favorably on the greatly reduced likelihood of "accidental" poisonings, though suicide was not mentioned. The greater concern with accidents rather than suicides is ironic since the latter outnumbered the former by more than three to one (in 1960, e.g., there were 2,499 suicides and 744 accidental deaths due to domestic gas poisoning [Registrar General 1971]). Moreover, a proportion of accidents were probably suicides, and some explosions were undoubtedly the result of suicide attempts. Indeed, one evening in 1970, one of us was disturbed from his criminological studies (or perhaps it was from changing his son's diaper) by an explosion that destroyed the roof of a nearby apartment building: this turned out to be the result of escaped gas resulting from a suicide attempt. The gas industry's inattention to the relation between toxicity and suicide seems to reflect a general presumption: people who want to kill themselves will find a way. Therefore, the authorities could hardly be held responsible for people's intentional deaths in the way that they might for some accidents. As is suggested below, the presumption is ill founded, though the gas authorities can hardly be criticized for being no wiser than anybody else at the time, including most experts on suicide.

C. Detoxification and the Decline in Suicide: Statistics

Table 1 shows the numbers of suicides by gas and by other methods in England and Wales for 1958–77, and figure 3 illustrates the relation between numbers of gas suicides and the annual average proportion of CO in the gas supply for England and Wales between 1960 and 1977 (figures for CO concentrations in 1958 and 1959 are available only for Great Britain as a whole [e.g., Kreitman 1976]). The decline in gas suicides closely matches reduced levels of toxicity. These suicides, which numbered 2,499 in 1960, when CO concentrations were above 11 percent, declined to a mere twenty-three in 1975, when average CO concentrations were less than 1 percent. Although CO concentrations began to be reduced at the end of the 1950s (the peak year for gas suicides was 1958), overall rates of suicide did not begin to decline until 1963 because the reduction in gas suicides before then was masked by a general rise in other suicides.

The fit between toxicity and suicide could hardly have been any closer. First, the measure of toxicity used is a relatively crude index

TABLE 1

Suicides by Domestic Gas, England and Wales, 1958–77

Year	Total Suicides	Suicides by Domestic Gas	Percent of Total
1958	5,298	2,637	49.8
1959	5,207	2,594	49.8
1960	5,112	2,499	48.9
1961	5,200	2,379	45.8
1962	5,588	2,469	44.2
1963	5,714	2,368	41.4
1964	5,566	2,088	37.5
1965	5,161	1,702	33.0
1966	4,994	1,593	31.9
1967	4,711	1,336	28.4
1968	4,584	988	21.6
1969	4,326	790	18.3
1970	3,940	511	13.0
1971	3,945	346	8.8
1972	3,770	197	5.2
1973	3,823	143	3.7
1974	3,899	50	1.3
1975	3,693	23	.6
1976	3,816	14	.4
1977	3,944	8	.2

SOURCE.—Office of Population Censuses and Surveys (1959–78).

because there were small daily, and larger regional, fluctuations in the actual toxicity of gas delivered to homes, depending on the contribution to the public supply of gas from different producing centers. Second, the measure of average CO concentration means somewhat different things before and after 1968, when conversion to natural gas began. Before 1968, the measure reflects the average toxicity of the gas in all homes. After 1968, an increasing proportion of homes—those that had been converted—had no CO in their gas supply; levels of CO in unconverted homes would therefore have been higher than is suggested by the graph. Third, certainty of death depends not just on the toxicity of the gas delivered but also on the rate at which it is absorbed into the bloodstream (e.g., Drinker 1938); this, in turn, depends on a range of other factors, including the size of the room, efforts to exclude fresh air, the amount of gas being released, and, possibly, the kind of appliance used (suicide may be easier with gas fires and ovens). Since the number of these appliances decreased during the period in question because of the widespread adoption of central heating and a general shift from gas

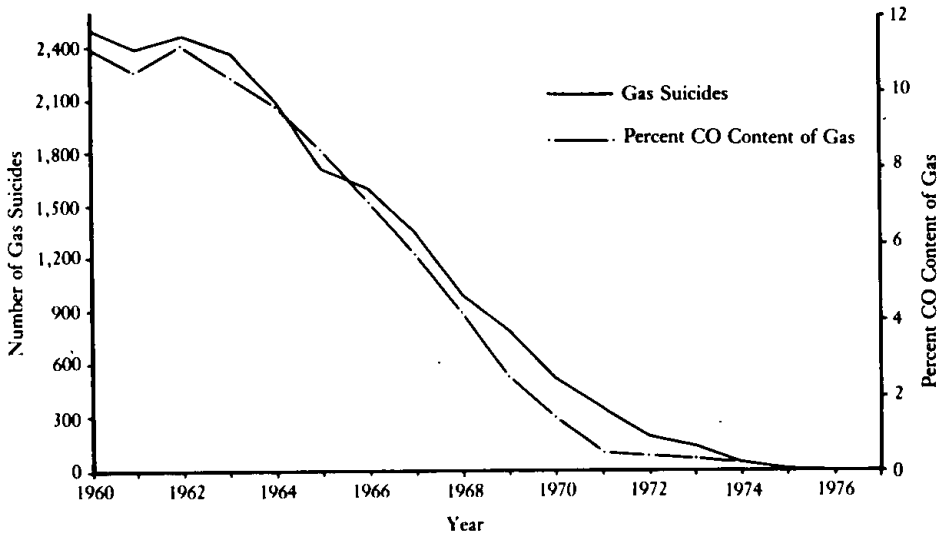

FIG. 3.—Relation between gas suicides in England and Wales and CO content of domestic gas, 1960–77. Sources: Registrar General (1959–73); Office of Population Censuses and Surveys (1974–85); unpublished estimates of CO content by British Gas.

to electric cooking, this, too, might have led to fewer suicide deaths in later years (Clarke and Mayhew 1987).

While there can be no doubt that detoxification of the gas supply caused the decline in gas suicides, the more important and interesting question concerns the effect of detoxification on the suicide rate as a whole. This question is pursued below. Because of the powerful relation with age and sex, data relating to suicide are presented in figure 4 for three age groups (twenty-four and younger, twenty-five to forty-four, and forty-five or older), and separately for men and women. In every case, rates are expressed per 1 million population in the various age groups. The top line for each age/sex group represents suicides by all methods, domestic gas included; the bottom line represents domestic gas suicides; and the middle line shows suicides by all other methods.

A number of conclusions can be drawn from inspection of these graphs.

1. The overall decline in male suicides between the early 1960s and the early 1970s is accounted for largely by the halving of suicides by the oldest age group—brought about by the elimination of gas suicides. There is no evidence that other suicides increased for this age group as gas suicides declined (fig. 4*e*).

2. The decline in gas suicides for the two younger groups of males during the same ten years is matched by increases in other kinds of suicide (fig. 4*a*, *c*). However, these other suicides had been increasing

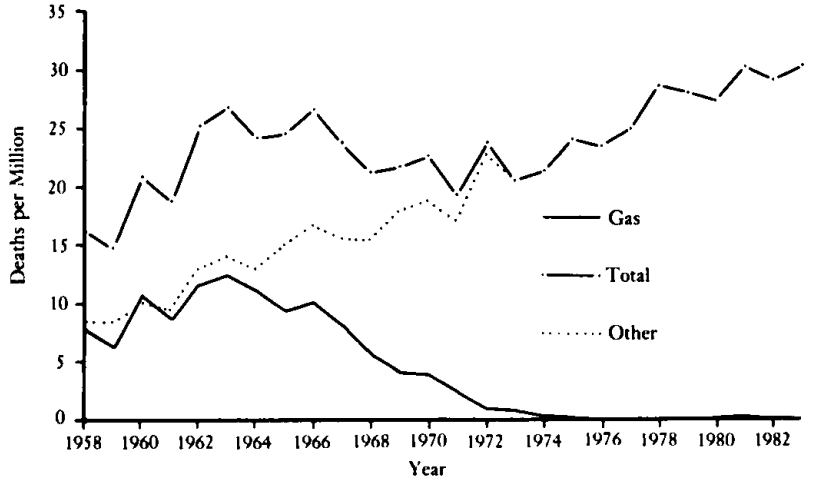

FIG. 4*a*.—Suicides in England and Wales by domestic gas and other methods for males under twenty-five years old. Sources for fig. 4, *a–f*: Registrar General (1959–73); Office of Population Censuses and Surveys (1974–85).

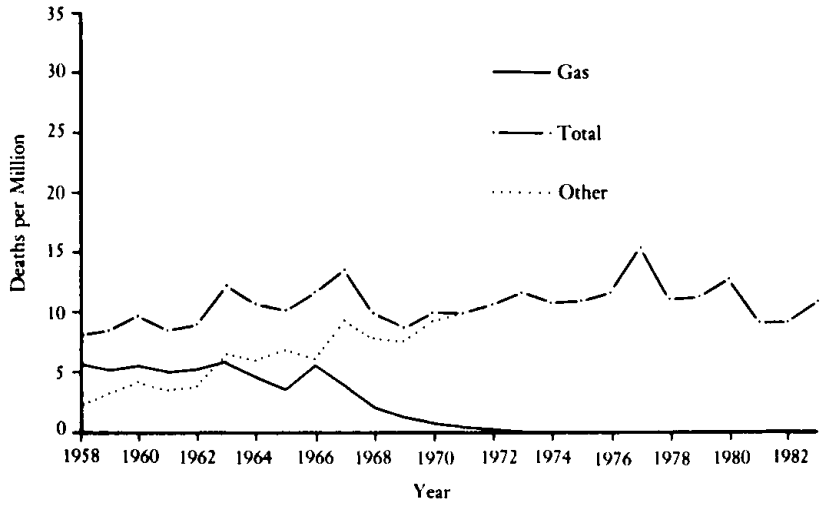

Fig. 4*b*.—Suicides in England and Wales by domestic gas and other methods for females under twenty-five years old.

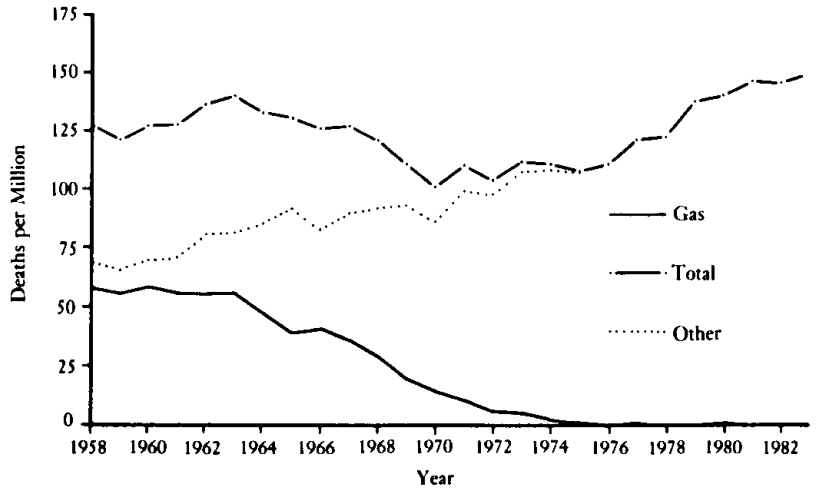

FIG. 4*c*.—Suicides in England and Wales by domestic gas and other methods for males twenty-five to forty-four years old.

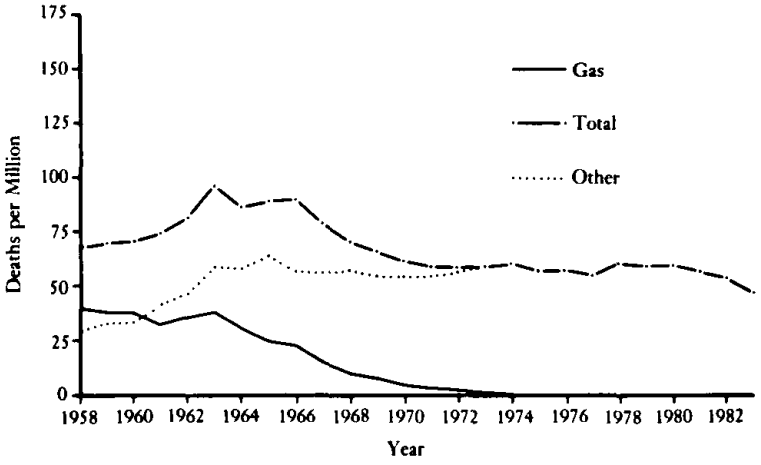

FIG. 4*d*.—Suicides in England and Wales by domestic gas and other methods for females twenty-five to forty-four years old.

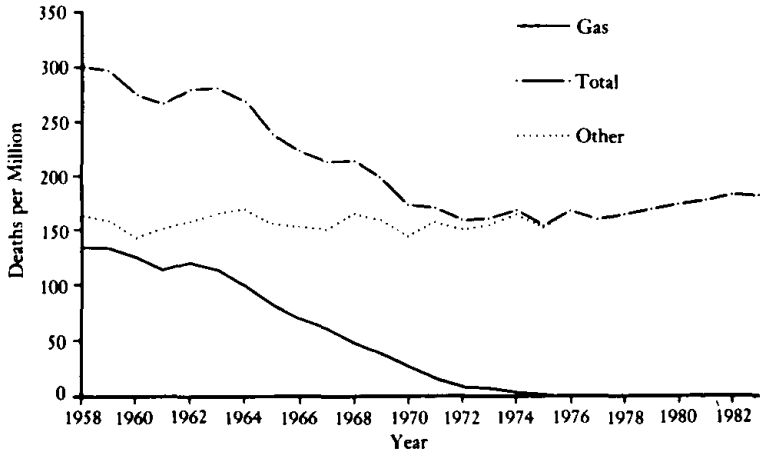

FIG. 4*e*.—Suicides in England and Wales by domestic gas and other methods for males forty-five years old or older.

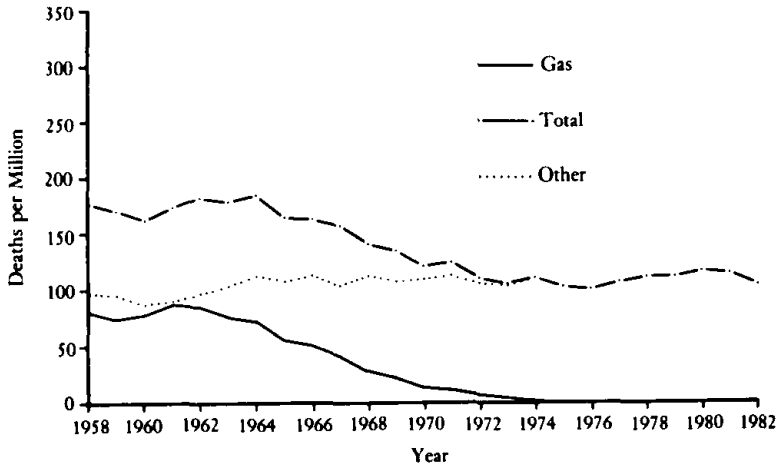

FIG. 4*f*.—Suicides in England and Wales by domestic gas and other methods for females forty-five years old or older.

before detoxification, which means that displacement from gas to other methods cannot wholly account for the observed pattern.

3. After 1975, when detoxification was all but complete, suicide rates for all three age groups of men show distinct rises (fig. 4*a*, *c*, *e*).

4. For women, the decline in gas suicides is not matched by increases in other kinds of suicide for the two older age groups, though this is the case for those under twenty-four years of age (fig. 4*b*, *d*, *f*).

5. Unlike the case for men, rates of suicide for women have shown very little increase since 1975.

While these facts indicate that, following detoxification, there was little displacement to other methods of suicide, especially by women and older men, and that thousands of lives were saved (6,700, according to the calculations made by Wells [1981]), some qualifications to both conclusions should be noted. Concerning displacement, one possibility is that some undetected displacement occurred in the form of *unsuccessful* attempts using less lethal methods such as drug overdoses. This would be difficult to test because records of attempted suicide are incomplete and also because attempts appear to outnumber completed suicides so greatly (by an estimated twenty to one [Wells 1981]), that, if all the latter were to be snatched from the jaws of death, the resulting increase in recorded attempts would be so small as to be barely detectable (Kreitman 1976). Moreover, it is widely believed that most attempts constitute a distinct behavioral syndrome—"parasuicide" (Kreitman et al. 1969)—motivated less by a wish to die than by an attempt to obtain help with personal problems. The increases in "attempts" that appear to have taken place in recent decades, especially among young people and women (Weissman 1974), cannot therefore be taken as evidence of displacement from gas unless—and this is a tragic possibility—some of those who died from gas were actually "parasuicides" who failed to realize its lethal nature. If this is so, as seems likely, detoxification achieved some of its effect by preventing such "accidental" deaths.

Another possible source of undetected displacement relates in particular to elderly suicides. Some of these may have poisoned themselves (e.g., with barbiturates) when gas became unavailable, and, as poisonings among the elderly are more easily confused with natural deaths than are gassings (Patel 1973), this may have artificially depressed the suicide statistics. However, concealment of such "displaced" poisonings will not have been complete, and it might be expected that, if the one method were readily substituted for the other, there would be an

inverse relation between the number of older suicides using gas and those using poisons. This possibility has been checked by Richard Farmer (personal communication, 1986) using data reported in Low et al. (1981), but he found no significant relation.

On the savings in life, there is the possibility that some of the apparent gain might have been eliminated through "delayed" displacement, the suicide some years later of people prevented earlier from using gas. A disproportionate increase in suicides of older people throughout the 1980s would be consistent with, though not necessarily proof of, this. It is too early yet to observe any full effect of delayed displacement, though to date the greatest increases have been among younger rather than older age groups. Furthermore, it cannot be assumed that the savings of life achieved through detoxification will continue; the suicidal population may identify new ways of killing themselves that share some of the advantages of gas. Indeed, there may already be some evidence of this in the increasing use of car exhaust fumes in England and Wales; for example, there were almost three times as many male suicides by this method in 1980 as in 1970 (Bulusu and Alderson 1984).

D. Alternative Explanations for the Decline in Suicide

Detoxification was identified as the likely cause of the reduced suicide rate in Birmingham as long ago as 1972 (Hassall and Trethowan 1972). This was soon followed by the suggestion that reduced toxicity levels might account for the national decline in suicides (Malleson 1973) and a little later by two detailed studies (Adelstein and Mardon 1975; Kreitman 1976) that reached that conclusion. Similar declines in overall levels of suicide had also been observed following detoxification of gas in Vienna (Farberow and Simon 1969) and Brisbane (Whitlock 1975).

Nevertheless, not all students of suicide have accepted the detoxification hypothesis; many who have not are apparently influenced by Stengel (1964), who observed, though without presenting data, that the transient decline in suicides following detoxification of gas in Basel was soon followed by a compensatory increase in drownings. That such displacement has been seen as inevitable has meant that explanations other than detoxification have been sought for the decline in the British suicide rate.

The first such explanation was that the decline in suicides may have been due to a revision of the International Classification of Diseases (ICD) under which suicides are recorded (World Health Organization 1967). This revision introduced a new category in 1968 of "undeter-

mined" cause of death, which could accommodate some of the marginal cases previously allocated to suicide. However, Kreitman (1976), Sainsbury (1983), and Bulusu and Alderson (1984) have concluded that, while a significant number of cases that previously would have been recorded as accidental poisonings began to be placed in the new "undetermined" category, the ICD revision seems to have had little effect on the recording of suicide. For example, Kreitman found that the decrement in suicides between 1967 and 1968 was no greater than that between other adjacent years in the period 1960–71 for all but two of fourteen sex-age subgroups. This result was repeated when CO suicides were examined alone.

A second hypothesis was that improvements in resuscitation and in treatment of poisoning, together with the establishment of more efficient ambulance services after World War II, should have resulted in the lives of some potential suicides being saved. While not an implausible idea, no supporting controlled study could be found by Brown (1979). Moreover, these improvements would be more likely to have achieved a reduction in suicides using less lethal methods (such as overdosing) than in those using gas, most of whom are discovered already dead.

Brown (1979) also investigated a third idea, that the improved treatment of suicidal patients—for example, through the wider use of antidepressants both in general practice and in the aftercare of mental hospital patients—may have brought about the drop in completed suicides (see also Barraclough 1972). Again, he was unable to find any supporting evidence, while Fox (1975) has pointed out that an unintended consequence of the wider prescribing of antidepressants would be to supply more people with the means of killing themselves.

A fourth explanation was that the declining suicide rates reflected the rapid development of the Samaritans, an organization that provides a lay crisis intervention service for depressed and suicidal people. Bagley (1968) compared changes in suicide rates in fifteen towns or cities that had Samaritans branches with those in two sets of fifteen control towns without such a service. He found that the Samaritans towns experienced a fall in their average suicide rates, while the other towns showed rises. As Brown (1979) points out, this study might show only that some third factor, such as social cohesiveness, could in the same town both increase the likelihood of the formation of a Samaritans branch and reduce the incidence of suicide. Nonetheless, Bagley's study was eagerly seized on by the Samaritans and their supporters (e.g., Fox

1975) and was called into serious question only nine years later by a replication study published by Barraclough, Jennings, and Moss (1977). Using a much larger sample of both Samaritans towns and controls and three different methods of matching, the new study could find no evidence of any preventive effect. Another major difficulty for the Samaritans hypothesis is that the decline in the suicide trend began to level off in 1971 while the numbers of Samaritans branches and their clients continued to increase until at least 1975 (Brown 1979).

A fifth hypothesis, that the suicide decline was due to improved social and economic conditions in Britain (Sainsbury, Jenkins, and Levey 1980), might appear somewhat perverse in that the Britain of the late 1960s and early 1970s is commonly thought to have been marked by "industrial unrest, rising unemployment and a constant state of economic crisis" (Fox 1975, p. 9). Indeed, it is clear that the 35 percent drop in the suicide rate between 1963 and 1975 occurred despite a 50 percent increase in the unemployment rate during the same period (Boor 1980; Kreitman and Platt 1984). Moreover, one other important social indicator, the rate of recorded crime, suggested a markedly deteriorating situation with a 60 percent increase between 1965 and 1974. The starting point of Sainsbury's study, however, was the observation that only Greece among eighteen other European countries had experienced a similar decline in suicide. Using a discriminant function analysis, it was shown that changes in the suicide rates in European countries between the periods 1961–63 and 1972–74 were correlated with socioeconomic changes as measured by such variables as the proportion of young people and working women in the population, the ownership of television receivers, rates of unemployment, divorce, and illegitimacy. Leaving aside whether suicide figures can be reliably used for international comparisons (in relation to Sainsbury's research, see Farmer and Rohde [1980]), the study is open to numerous technical criticisms. These concern the selection of socioeconomic variables and the rationale of their relation to suicide, the questionable division of countries into those with "high increases" in suicide and others with "low increases or decreases" for purposes of the discriminant function analysis, and the use of this analysis with fifteen variables but only eighteen cases. At best, the study demonstrates that socioeconomic change may be responsible for some changes in suicide rates. However, it does not provide an alternative explanation for the decline in the British suicide rate during the period in question: on the basis of the analysis presented, the suicide rate of England and Wales should have increased

more than that of seven other countries, whereas in reality it showed the greatest decrease of all.

Besides these alternative explanations for the decline in suicide, some evidence apparently inconsistent with the gas detoxification hypothesis has also been produced. In particular, detoxification of the gas supply in Holland in the early 1960s seems to have had much less of an effect on the overall rate of suicide (World Health Organization 1982). Thus, in 1959, there were 807 suicides in Holland, of which 202 were attributed to domestic gas. Ten years later, in 1968, there was little change in the overall number of suicides—809 (because of population increases, this number represents a small decline of 0.8 per 100,000 in the rate of suicide). This was so even though domestic gas suicides, of which there were twelve, had been almost eliminated by 1968 (Centraal Bureau voor de Statistiek 1959–68). However, suicide by domestic gas never accounted for more than 25 percent of suicides in Holland, whereas in Britain the figure was closer to 50 percent. This may be due partly to the fact that fewer households in Holland than in England (in 1960, 60 and 80 percent, respectively) received a toxic gas supply (Clarke and Mayhew 1987). If gas suicides were less common in Holland, it may not be surprising that detoxification had a smaller effect on the overall rate of suicide.

Some other apparently inconsistent evidence relates to the claim that towns in England and Wales and provinces in Holland whose gas supplies were not detoxified until relatively late showed the same patterns of suicide as those whose supplies were detoxified earlier (Sainsbury 1986). Because of inadequate data, the claim cannot be evaluated with respect to Holland. As far as the British comparison is concerned, however, the claim does not appear to be well supported by the data. Only twelve towns (all of which had roughly the same levels of CO in their gas supplies in 1958, but five of which had lower levels by 1967) were included in the study, and between them these accounted for only a small number of suicides (135 in 1958 and 142 in 1967). Moreover, the study relates to a period before the conversion to natural gas, and the "detoxified" towns still had a small percentage (about 5 percent) of CO in their (manufactured) gas supplies. This level of CO is sufficient to kill, even though death may take longer; unfortunately, no data are presented about the number of suicides due to domestic gas in either group of towns.

To sum up so far, it is clear that substantial reductions in the CO content of the public gas supply in Britain led to the virtual disappear-

ance of suicide by domestic gas. Because few people stopped from using gas found another way of killing themselves, a substantial decline in the overall number of suicides resulted. Since the mid-1970s, suicides have gradually increased and, for men, have now surpassed the levels that held prior to detoxification of the gas supply. In light of the evidence concerning a general rise in suicidal behavior, and also because of the increased use of some more novel means of suicide (such as car exhaust gases), it is not unreasonable to think that these increases might have occurred even without detoxification.

III. Implications for the Understanding and Prevention of Suicide

That the availability of a method can so significantly affect the incidence of suicide has important implications for both theory and prevention. Other evidence about the relation between suicide and the availability of different lethal methods is also reviewed in this section.

A. Why So Little Displacement to Other Lethal Methods?

Many, if not most, students of suicide found it difficult to accept that a reduction in opportunity could have such an important effect on the incidence of suicide—hence the strenuous search for what seem to have been unlikely alternative explanations, the sometimes acerbic correspondence on the issue (e.g., the exasperated tone of Malleson's [1973] letters to the *British Journal of Psychiatry*), and the guarded terms in which those (such as Adelstein and Mardon [1975], Farmer [1980], and Bulusu and Alderson [1984]) who otherwise seem persuaded by the evidence have drawn conclusions about the role of gas detoxification. It is not difficult to see, however, why the idea that the availability of a method could be an important determining factor in suicide has been so strongly resisted. It appears to demean the personal suffering that fuels most suicidal behavior and to call into question the role of the helping professions in effective prevention. It also fits uncomfortably with prevailing theories about the causes of suicide, which attach little importance to the availability of different methods.

These theories can be divided into two main groups, with a third overlapping category. First, sociological theories deriving from Durkheim (1957) locate the causes of suicide in social disorganization or disintegration. Studies in this tradition have demonstrated numerous correlations between social and economic indicators and regional and national variations in suicide. Second, psychological theories deriving

from the early ideas of the psychoanalytic school see suicide as the outcome of personal disturbance, often associated with clinical depression. Related research has found suicides to be suffering from disturbed relations, ill health, financial or employment difficulties, bereavements or disappointments in love, or alcoholism and drug addiction. The third overlapping category, originating in Halbwachs's (1978) reinterpretation of Durkheim, stresses suicide's intentionality whether as the outcome of social or psychological pressures or of a rational assessment of the worth of current or future life (e.g., Brandt 1975).

Sociologists have often discussed variations in methods of death in relation to national and regional culture, and psychologists have routinely catalogued preferred methods by age, sex, and a variety of personal variables. Neither group, though—not even those who emphasize the rationality of suicide—seem prepared to regard availability of a method as a causal factor in itself. Rather, the assumption is that, once someone has reached the point of committing the act, how it is done is of limited importance: after all, there are surely just as many ways of killing oneself as of killing a cat.

To expose the questionable nature of this assumption requires some speculation about perceptions of gas as a method of death and how these might have changed with lessened toxicity. Much depends on how well informed people were in the first place about the highly lethal nature of gas. (As death could result in less than half an hour, gas would have been an unsuitable method for those primarily seeking attention—though some may not have known this.) Whatever the initial level of knowledge, few people would have known that gas was becoming less poisonous in the years before conversion, and many may not have known, at least initially, that natural gas was nontoxic—this was certainly not one of the benefits trumpeted by the media following the North Sea discoveries. This means, as Brown (1979, p. 1122) has commented, that many suicidal people must have continued through ignorance to do the traditional thing and "put their heads in the gas oven." Just how many is unknown because most would have suffered little worse than nausea or a headache (Kreitman 1976). What they did next would depend on their determination to die. Some of the less determined may have made a further unsuccessful attempt with one of the less lethal methods. Some will have decided, however, that they were "not meant to die"; others might have experienced a diminution in stress or might have obtained the help they needed.

Some of the more determined—though the statistics suggest not

many—will have killed themselves in another way. It would not, however, always have been easy to identify an acceptable alternative because, prior to detoxification, gas had unique advantages as a lethal method. It was widely available (in about 80 percent of British homes) and required little preparation or specialist knowledge, making it an easy choice for less mobile people and for those coming under sudden, extreme stress. It was painless, did not result in disfigurement, and did not produce a mess (which women in particular will try to avoid [e.g., Marks 1977]). Because death was not as quick as with some other lethal methods, it had the advantage for the superstitious of allowing destiny some hand in the decision. Finally, it allowed dependents to conceal the suicide as an accident. Deaths by hanging, asphyxiation, or drowning all usually demand more planning, while more courage would be needed with the more violent methods of shooting, cutting, stabbing, crashing one's car, and jumping off high places or in front of trains or buses. These methods are also more likely to result in distress and danger to others and, in addition, could lead to physical disability were death not to result. Only CO poisoning by car exhaust gases possesses many of the same advantages as domestic gas poisoning, except that not everyone has a car, a garage, or, perhaps, the necessary knowledge.

To summarize, it would seem that there were two reasons for the drop in overall rates of suicide following detoxification of gas: some of the more determined individuals were unable to find an acceptable and equally lethal alternative, whereas some of the less determined may have been saved from making a lethal mistake. Which of these was more important is not known.

B. Suicide as a Decision

The above discussion suggests the need for a theory that takes proper account of the mental processes underlying and sustaining each act of suicide. These include the ways in which an individual predicament comes to be defined as hopeless, accompanying feelings of depression, the manner in which solutions are sought and evaluated, how suicide first comes to be entertained, and how plans are made and put into effect. The evaluation of life as no longer worth living, the decision to end it, and the choice of method may be interactive rather than sequential. For example, those for whom suicide is prohibited on religious grounds may gradually redefine their situations or find other solutions. Others may reinforce the idea with thoughts about people who have found it the only way out and may abandon the idea only when unable

to find an acceptable method. Those who do succeed in identifying an acceptable method may go on to develop realistic plans, including a detailed scenario of the place and the time of death. The result of this mental preparation may be to reinforce feelings of hopelessness and the belief that there is "no other way out."

While elements of such a theory are scattered in the literature, they need pulling together under some framework such as is provided by the rational choice or decision perspective on crime (Clarke and Cornish 1985; Cornish and Clarke 1986). In this vein, suicide would be seen as an intentional act (Baechler 1975; Halbwachs 1978)—the outcome of a decision made with varying degrees of rationality and determination to end a life without hope (e.g., Farber 1968; Beck, Kovacs, and Weissman 1975). The decisions involved would need analyzing in terms not just of the sources of motivation and alternatives considered but also of the thought processes involved. Account would need to be taken of alcoholism—frequently encountered among suicides—and of depression, which, it has been suggested, leads to crude, "either/or" thinking and to pessimistic evaluations of alternative courses of action (Brandt 1975; Schneidman 1985). Extreme ambivalence and superstitious thinking associated with a "gamble with death" have also often been described. Finally, it would need to be recognized that a suicide decision may sometimes be fully rational (Battin and Mayo 1980).

Though the main focus of theoretical analysis would be the thinking and emotions underlying the suicidal decision, other important theoretical components would be the motivational and situational contexts of suicide. The former may not be especially problematic since almost any of the misfortunes and miseries of the human condition seem capable of providing the motivation. Rather, it is the method of dealing with these motivating factors that seems to be the issue. Contributing to thoughts and feelings, and ultimately to the choice of solution, will be aspects of the situation unrelated to the source of unhappiness or distress. Included among these will be features of the individual's daily life that could impede or facilitate suicide—such as the availability of an acceptable means of death.

This represents the merest sketch of a theory, but a number of features should be apparent. First, suicide is seen as the outcome of a dynamic interplay between objective motivating and facilitating conditions and the individual's thoughts and feelings. Second, it is apparent under this view that suicidal feelings could sometimes be quite transitory and may not be experienced again by a particular individual.

Third, nothing is implied about the pathology of the behavior: in many cases, the decision to commit suicide will be readily understandable, while, in others, the underlying reasoning may be greatly distorted (even leaving aside clearly psychotic suicides). Fourth, this view of suicide owes no allegiance to any single parent discipline: both psychological and sociological motivating variables have their place, while the decision perspective has antecedents in an economic analysis of suicide (Hamermesh and Soss 1974). Fifth, it provides a way of explaining some of the more puzzling features of suicide—for example, why religious beliefs sometimes protect their adherents from suicide, why newspaper accounts of suicides may stimulate imitative suicides (Phillips 1974, 1979), and why certain locations may serve as a magnet to the suicidally inclined. Finally, and most important in terms of the present discussion, it provides an understanding of the ways in which the characteristics of different methods play an important determining part in suicide and, in particular, of the reasons why wholesale displacement to other lethal methods of suicide did not take place in Britain following detoxification of gas.

C. Prevention of Suicide

The suicide literature is replete with examples of local or national variations in preferred methods of death, which are seen to reflect differences in the availability of methods or different traditions in their use. Thus, for example, the high rate of gun suicides in Australia and the United States (particularly the southern states) has been blamed on the more widespread ownership of firearms and the associated development of "gun cultures" (Farmer and Rohde 1980; Lester 1984). The commonest form of suicide in Holland until 1967 (when it was replaced by barbiturate deaths) was drowning: "The Dutchman knows about death, because he knows about the water" (Noomen 1975, p. 168). In India, "the common mode of attempting or committing suicide is by gulping down an insecticide (organophosphorous compound) preparation. They are cheap and easily available" (Rao 1975, p. 234). It used to be the case that more people in Upstate New York than in New York City killed themselves with car exhaust fumes, possibly because more upstate inhabitants had access to garages (Drinker 1938). Jumping from a high place—the Golden Gate Bridge—is a particularly common form of suicide in San Francisco (Seiden 1967), where the local byword is that, when stress gets too great, one can always "go off the bridge" (Seiden and Spence 1983–84, p. 206).

There are also many examples of changes in the frequency of particular forms of suicide that can easily be related to changing social or environmental conditions. For example, in Britain (Adelstein and Mardon 1975), Australia (Whitlock 1975), and elsewhere, suicides by overdosing with barbiturates became common with the increasing prescriptions of these drugs. Equally, reductions in these suicides came about with wider knowledge of the dangers of overprescribing and with the availability of safer alternatives. Lester and Murrell (1980, 1982) have shown for the United States that states with stiffened gun control laws experienced greater reductions in rates of suicide between 1960 and 1970 than other states, and Boor (1981) and Boyd (1983) have argued that a substantial rise in gun suicides in the United States since the early 1960s parallels the increase in the sales of guns. Finally, it has been claimed that suicide by jumping off tall buildings increased in both Helsinki (Achte and Lonnqvist 1975, p. 108) and Taiwan (Rin 1975, p. 251) as more of these were built.

One particularly revealing example concerns suicide by car exhaust gases. These suicides have become less common in the United States as a result of emission controls (Landers 1981; Hay and Bornstein 1984); for example, carbon monoxide concentrations in the exhaust gases of General Motors' cars declined from 8.5 percent in 1968 to 0.05 percent in 1980. In Britain, on the other hand, where emission controls have yet to be introduced, this form of suicide has substantially increased in recent years (Bulusu and Alderson 1984), presumably as a result of increased car ownership and more widespread knowledge about this means of death. (Additional factors may have been the construction of more houses with garages and the increased popularity of station wagons and "hatchbacks" with a rear door permitting the easier introduction into the passenger compartment of a hose to carry the exhaust fumes.)

Such observations have evoked relatively little interest because of the assumption that a genuinely suicidal individual will always find a method. However, the decline in suicide following detoxification of gas in Britain suggests that the variations in methods of suicide described above may just as much reflect differences in the incidence of the behavior as in its forms. This is easier to accept if suicide is seen not simply as the result of an inexorable drive to self-extinction. Rather, it may often be the combined result of deep but possibly temporary despair, the weakening of moral restraints against the behavior, *and* the availability of a method that is not too difficult or repugnant.

This has profound implications for prevention. Some of these relate to crisis intervention programs insofar as these—despite the generally negative evidence (pace Miller et al. 1984)—are able to reach those in temporary though lethal despair rather than, as often seems the case at present, less profoundly unhappy young women (Lester 1986). Others relate to the possibility that advertising suicide prevention services might in some way "legitimate" the option for those faced with a severe personal problem. The implications that most concern us here, however, relate to the reduction of opportunities for suicide—what Seiden (1977) calls the "public health/public policy" approach to prevention. Measures under this head would include stiffer gun control laws, elimination of carbon monoxide from public gas supplies and from car exhausts, barriers or reduced public access at notorious jump sites, restrictions on the sale of poisonous substances, and a range of measures designed to prevent overdosing, including not just tighter prescribing rules and the development of safer alternatives but also the supply of such drugs in "blister packs," in large capsule form, or—heaven forbid—only as suppositories.

The difficulty of thinking of realistic ways of reducing opportunities for traditional forms of suicide—such as cutting, hanging, or strangulation—makes the public health/public policy approach no panacea. Even when relatively certain gains are to be had, proposed measures will be resisted on various grounds, including ethical arguments about the desirability of preventing suicide, claims that fundamental causes of the behavior are being neglected, accusations that civil liberties are being eroded, and a range of arguments about the costs, impracticality, and inconvenience or unaesthetic qualities of the proposed measures.

Without undertaking a detailed discussion of these points, it should be noted that the failure to address underlying causes can be remedied in other preventive programs, though the availability of an easy method does of itself constitute a "cause." The ethical case for allowing individuals to take their own lives holds no less for other sorts of prevention, and the need to protect civil liberties has always to be tempered by a Benthamite calculus: for example, if costs and aesthetic considerations prohibit antisuicide hardware on the Golden Gate Bridge, then surely the long-term saving of lives would justify restricting pedestrian access? This is especially the case since Seiden and Spence (1983–84) have noted that the nearby Bay Bridge has many fewer suicides, partly because of restricted access, and that suicide deaths have been greatly reduced by limitations on access at some notorious sites, formerly ac-

counting for hundreds of deaths, such as the Eiffel Tower and Mt. Mihara in Japan. Indeed, failure to take such precautions might, in this increasingly litigious age, become grounds for negligence suits.

IV. Criminological Implications

While both suicide and crime attract moral censure, the former is now treated in most countries as behavior requiring medical rather than legal intervention. This has led to a separation of the literatures relating to the problems, even though concepts and findings frequently overlap. Thus, both crime and suicide are seen to result from disturbed upbringing, impaired relations, and alcoholism; Durkheim's (1957) concept of anomie was adopted largely unchanged to serve as the basis for Merton's (1938) influential sociological theory of crime; Menninger's (1938) psychoanalytic treatment of suicide sees its basis in aggressive impulses that could just as readily become homicidal as suicidal; and Henry and Short (1954) see both suicide and homicide as aggressive reactions to frustration induced by changes in the business cycle—suicide by higher-status individuals being more likely as their prosperity declines and homicide by lower-status individuals as the fortunes of others improve. However, both suicide and crime—especially violent or sexual crime—are commonly seen to derive from strong internal motivation, and it is this fact that permits criminological lessons to be drawn from the gas suicide story. In particular, it allows a more confident restatement of two themes previously developed in this series, concerning (1) the need to promote opportunity-reducing measures for crime, or "situational prevention" (Clarke 1983), and (2) the potential value of "choice" or "decision" models of crime in developing preventive and deterrent policy (Clarke and Cornish 1985).

A. The Lessons for Displacement

The gas suicide story is important precisely because it furnishes clear proof that the preventive gains of a reduction in opportunity were not merely dissipated through displacement. Even if some displacement occurred, particularly to less lethal methods, thousands of lives were still saved. This changes the balance of the argument about the value of situational measures. It is now more incumbent on the skeptic to show that displacement has defeated a crime prevention measure than for the advocate to prove beyond doubt that it has not. Adding further weight to the gas detoxification evidence is the fact that it relates to premeditated behavior for which it might be expected that opportunities

would be sought or created rather than merely seized (e.g., Bennett and Wright 1984). The case for opportunity-reducing measures with respect to such behavior has been much more difficult to make than that for more trivial and, possibly, impulsive criminal acts. If the incidence of suicide can be so dramatically affected by reduced opportunity, there seems little reason why this should not also be true of deep-seated criminal acts of sex and violence or why situational prevention should not be effective in dealing with some self-destructive drug and alcohol offenses.

Despite this, there are some respects in which the gas suicide story permits only a limited commentary on the highly complex concept of displacement. In particular, it is concerned with just one of its forms—a change of method. More important, it leaves many questions unanswered about the *reasons* for the lack of displacement to other lethal methods following detoxification. For example, was it that many people who used gas were hoping to give fate a hand in the decision—something that would be more difficult with other lethal methods such as jumping off high places? Was it that, with the removal of this easy method, fewer people even began to think about killing themselves? Or did they give up the idea only after failing to kill themselves with gas?

While it may be hard to accept that people were put off killing themselves by the absence of an easy method, the means of death does seem of great importance to the potential suicide. Thus, women are more repulsed by violent and bloody methods (Marks 1977), and some people appear to rule out certain methods for symbolic reasons—for example, the suggestion (Seiden and Spence 1983–1984) that jumping off the Bay Bridge is seen as more "déclassé" than is jumping off the Golden Gate Bridge. It should not be surprising, therefore, that the absence of handguns does not simply lead to more people being strangled, beaten, and stabbed to death nor that increased bank security has not always resulted in an escalation of violence (Ball, Chester, and Perrott 1978). The methods of achieving a criminal end are not equivalent for the offender. For one, there are obvious differences in risk and effort that, for example, may give guns advantages over other murder weapons. There will also be important ethical distinctions to be drawn: not every bank robber is prepared to injure or kill to get the loot.

More research into offenders' decision making will be needed if these matters, and, thus, displacement itself, are to be properly understood. Indeed, the concept of displacement is consistent, not just with the

hydraulic model of offender motivation, but also with a rational perspective that sees crime as the outcome of choices and decisions made by the offender in pursuit of his own interests (Cornish and Clarke 1986). Moreover, the contingent nature of displacement fits more comfortably with a choice perspective since this allows for the interplay of criminal and noncriminal solutions to the offender's perceived needs. In other words, the automatic response to blocked criminal opportunities may not always be a crime displacement mechanism but a decision to forgo crime in favor of some legal alternative action.

B. Practical Difficulties of Situational Prevention

The difficulty of thinking of ways of reducing the opportunity for many violent crimes, particularly muggings, assaults, and rapes, is a common objection. This is less true, however, of pub fights (Hope 1985*a*; Ramsay 1986) and of robberies of banks (Ball, Chester, and Perrott 1978) and convenience stores (Castleman 1984). In our minds, at least, there is little doubt that limiting the availability of firearms in the United States would have a substantial effect on homicide and probably also on other violent crimes. We draw this conclusion from the fact that, for 1980–84, the nongun homicide rate in the United States was only 3.7 times greater than that in England and Wales, while the rate for gun homicides was 63 times and for handgun homicides 175 times greater (see table 2; other criminologists, however, differ and question the linkage between gun availability and violent crime; see Gates [1985]). We are also persuaded by the evidence that the presence and nature of firearms play a substantial role in the characteristics and outcome of violent crime (e.g., the finding that, among robberies, the likelihood of victim injury is less when the assailant is armed with a firearm because of the greater risks attendant on opposing the robber and the related finding that, when injury occurs, victims of armed robbers are more likely to be seriously injured or killed than are victims of nonarmed robbers [e.g., Cook 1983]).

In the long run, however, the need to do something about the appalling toll of violence (with black males presently having an estimated lifetime risk of being murdered approaching one in twenty-one [Langan and Innes 1985]) may promote more effective gun controls. This might be more likely were homicide to be addressed—as we have suggested suicide should be—from the more morally neutral perspective of a public health problem. This would seem entirely appropriate given that homicide is a leading cause of death for some important demo-

TABLE 2

Gun and Nongun Homicides in England and Wales and in the United States, 1980–84

Type of Murder	Homicides (N)		Average Annual Rate per 1m Population*		England and Wales/ United States Ratio
	England and Wales	United States	England and Wales	United States	
All gun†	213	63,218	.86	54.52	1:63.4
Handgun†	57	46,553	.23	40.15	1:174.6
Nongun†	2,416	41,354	9.75	35.67	1:3.7
Total‡	2,629	104,572	10.61	90.19	1:8.5

SOURCES.—Home Office (1981–85); Federal Bureau of Investigation (1981–85).

* Annual average population for 1980–84: United States, 231.9 million; England and Wales, 49.55 million.

† Figures for the United States involve some extrapolation from homicides for which weapon was known.

‡ Figures for England and Wales relate to offenses currently recorded as homicide.

graphic subgroups; for example, it is the leading cause of death for black American males, aged twenty to thirty-four (Baker, O'Neill, and Karpf 1984).

The difficulties facing gun control signify a more general problem of implementation: opportunity-reducing measures with respect to crime encounter the same objections concerning individual freedoms, costs, inconvenience, and so forth as they do with respect to suicide. In addition, prevention of crime is frequently seen as less important than its punishment. These obstacles have become more apparent with attempts to implement situational prevention (see, esp., Hope 1985*a*). Indeed, just as some of the theoretical objections to situational prevention—concerning its alleged neglect of fundamental causes and the dangers of displacement—begin to lose their force, so the practical impediments are assuming greater importance. This is somewhat ironic, as Hope (1985*b*) has pointed out, since the early advocacy of situational prevention (e.g., Mayhew et al. 1976; Clarke 1977) rested largely on its practicality, at least as compared with social prevention, which had been powerfully criticized as being impossible to implement (Morris and Hawkins 1970; Wilson 1975). The moral of this is not that there should be less investment in situational prevention since, unlike social prevention, there is much evidence that it works (Heal and Laycock 1986). Rather, it is that much more effort will have to be devoted to implementation and that the rate of progress is likely to be slower than originally anticipated. It takes time for the public to accept the need for change—to take an example from another field, it was long after the first convincing demonstration of the link between smoking and lung cancer that governments accepted the need to limit advertising of tobacco products and that people's smoking habits began to change.

C. The Opportunity Structure for Crime

The hydraulic model has also influenced ideas about crime at the societal level: societies tend to be seen as having their own "natural" levels of crime, determined by the collectivity of psychological and social pressures, while differences in crime patterns have been thought to reflect the comparatively unimportant effect of each society's criminal "opportunity structure." Similarly, unusual manifestations of crime (soccer hooliganism in Britain or violent student riots in Japan) are seen to represent weak points in a society's defenses or, if occurring in normally law-abiding countries, "safety valves" for pent-up aggression.

The gas suicide story suggests a different, stronger effect of the

opportunity structure. Suicide by gas was common in Britain, not merely because it was the easiest way to act out suicidal despair, but because the existence of this method may have encouraged more unhappy people to pursue the idea of killing themselves. In other words, gas suicide may have been as much a product of the particular opportunity structure pertaining in Britain as it was of social and psychological malaise. This is as likely to be true of soccer hooliganism and violent student riots. Thus, soccer matches in Britain often bring together large crowds of working-class youths in a state of high, sometimes inebriated, excitement. They are herded in large uncomfortable stadia, under the expectant eyes of the media, to watch a fast-moving game in which fights may erupt among players and questionable decisions are made by referees. It is not difficult to understand how hooliganism might arise under these conditions or, in theory, how an attack on the opportunity structure could eliminate the behavior. Possible situational measures would include a ban on the sale of alcohol at the match, segregation of rival fans before, during, and after the game, provision of seating for all spectators, barriers to prevent fans from running onto the field, less sensationalized media coverage of hooliganism, and severe fines of players for unsportsmanlike behavior. More generally, rather than searching for general explanations and a panacea, it seems best to regard crime—and perhaps even suicide as well—as a set of diverse, loosely connected problems requiring specific, custom-made solutions.

The relation between opportunity structure and crime is, however, far from straightforward: many more opportunities for crime exist than are acted on (Clarke 1984), and, unquestionably, there are important intervening variables relating to the perception and evaluation of opportunities. For example, as certain material goods become more widely owned, there may come a point at which their social value declines and they are less sought after by thieves (Gould 1969), even if given less protection by their owners. A further example is provided by the fact that fewer people killed themselves with domestic gas in Holland than expected from measures of its toxicity and availability, possibly because suicide in Holland really is associated in the public consciousness with drowning rather than with gas.

Some useful lessons for criminology follow from speculating about the effect of detoxification on the opportunity structure for suicide in Britain. A likely consequence will be that new cohorts of potential suicides will identify novel methods, such as car exhaust poisoning, that then gradually become established in public knowledge. This pro-

cess is similar to displacement except that the new methods are not necessarily identified and used by individuals prevented from using toxic gas: many of those now availing themselves of car exhaust fumes may not even have known that domestic gas was once an option. A crime example would be the rise in convenience store robbery that may have resulted from increased bank security: many of those now obtaining cash in such robberies may not have considered robbing banks—they may have been too young when this was a feasible option. Another change in the criminal opportunity structure producing displacement-like effects would be the move to the "cashless society." While reducing opportunities for theft, this has presented new possibilities for computer crime, for instance—possibilities exploited by offenders who may never have entertained the idea of mugging or committing other forms of personal theft.

The gas suicide story permits one further comment on the importance of the opportunity structure at the stage of first entertaining the idea of committing a deviant act. Doubt has been cast on the notion that much crime is impulsively committed, following the sudden perception of a criminal opportunity (Maguire 1980; Bennett and Wright 1984), and this, in turn, has been used to question the value of situational prevention. However, just as the existence of an easy method might have encouraged some people to think about suicide, so, for example, the recognition that residential burglary is now easier because of lower occupancy levels and a greater amount of "stealable" property might have tempted more individuals to try their hand at this crime (e.g., Cohen and Felson 1979). How this became recognized and how such knowledge about new criminal opportunities spreads would be a fruitful line of inquiry.

Finally, that crime and suicide rates are both importantly influenced by opportunity structure invites questions about their use as indicators of social malaise. For example, wartime declines in suicide are generally thought to result from an increased collective sense of belonging in response to an external threat (Durkeim 1957). However, aside from the possibility of less complete record keeping in time of war, other interpretations are possibly less favorable to a malaise hypothesis: despairing people during wartime (of whom there may be no fewer) may be more content to let fate take its course and perhaps be killed through enemy action; or they might postpone the suicide decision to the war's end (by which time despair may have evaporated). Likewise, the recent steady increases in suicide and attempted suicide for most age groups

cannot be taken as clear evidence that people are becoming more alienated and despairing. Not only may there be more opportunities for suicide, but the increases may also reflect changes in ways of dealing with despair: as a result of wider knowledge and more stress on self-determination, more people might see suicide as an acceptable way of resolving their personal problems. This, too, would be difficult to interpret as evidence of social malaise.

Without wishing to push the analogy too far, rising crime rates might also indicate not just that the criminal justice system is becoming increasingly ineffective or that the population is now more callous, aggressive, and greedy. They may not even reflect simply more opportunities for theft, the increased numbers of adolescents, or less adult supervision (Felson and Gottfredson 1984). Rather, in the way that suicide may have become a more acceptable option as a result of improved education and higher levels of personal responsibility, so some of the increases in crime could be due to similar causes. More people have wider knowledge of the world and more role models to draw on, criminal as well noncriminal. They may also be making more complex judgments about the degree of harm caused by particular criminal acts. That so little is known about these matters further reinforces the need for major programs of research into the nature of criminal thinking and decision making.

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