mitted beween two states having the same isotopic spin. In fact, the giant resonance in a non-self-conjugate nucleus should split into two parts—one with the isotopic spin of the ground state (written $T_<$), the other with one unit more of isotopic spin ($T_>$). The part with $T_<$ can be fed by alpha capture, and thus the selection rules of isotopic spin permit observation of the giant resonance. However, as shown in Fig. 9, the yield from the $Si^{30}(\gamma,\alpha_0)Mg^{26}$ reaction, the inverse of the $Mg^{26}(\alpha,\gamma)$, is even less than for the isotopic-spin-forbidden $Si^{28}(\gamma,\alpha_0)Mg^{24}$ reaction. This fact shows that it is not the selection rules of isotopic spin that inhibit alpha capture through the giant resonance.

Summary and Conclusions

The data on radiative capture through the giant resonance have led to a model in which the capture is pictured as proceeding through a single broad (and therefore short-lived) state that can be called the giant-resonance state. This state is the one formed directly upon capture of a proton, and hence most of the capture radiation is emitted quickly in the direct-interaction mode. Some of the energy that is contained in the giant-resonance state is shared with the more-complicated states of the compound nucleus (that is, with states having many excited nucleons). This sharing, in turn, gives rise to the fine structure that is observed within the giant-resonance envelope. The constant angular distributions that are observed throughout the giant-resonance region support the single-state picture of the giant resonance.

The simple model appears to account for the main features of the data, and at least qualitatively accounts for the variation in yield for proton capture through various giant resonances. Further information about the giant-resonance state is obtained from the alpha-capture data and from the characteristic angular distributions of the various gamma rays. However, there remains the difficulty that the shell-model picture predicts a varying angular distribution—contradicting the experimental result. Work in this field is being continued in the hope of resolving this difficulty and of extending the model to provide a more complete picture of this important nuclear phenomenon.

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Population Policy: Will Current Programs Succeed?

Grounds for skepticism concerning the demographic effectiveness of family planning are considered.

Kingsley Davis

Throughout history the growth of population has been identified with prosperity and strength. If today an increasing number of nations are seeking to curb rapid population growth by reducing their birth rates, they must be driven to do so by an urgent crisis. My purpose here is not to discuss the crisis itself but rather to assess the present and prospective measures used to meet it. Most observers are surprised by the swiftness with which concern over the population problem has turned from intellectual analysis and debate to policy and action. Such action is a welcome relief from the long opposition, or timidity, which seemed to block forever any governmental attempt to restrain population growth, but relief that "at last something is being done" is no guarantee that what is being done is adequate. On the face of it, one could hardly expect such a fundamental reorientation to be quickly and successfully implemented. I therefore propose to review the nature and (as I see them) limitations of the present policies and to suggest lines of possible improvement.

The Nature of Current Policies

With more than 30 nations now trying or planning to reduce population growth and with numerous private and international organizations helping, the degree of unanimity as to the kind of measures needed is impressive. The consensus can be summed up in the phrase "family planning." President Johnson declared in 1965 that the United States will "assist family planning programs in nations which request such help." The Prime Minister of India

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said a year later, "We must press forward with family planning. This is a programme of the highest importance." The Republic of Singapore created in 1966 the Singapore Family Planning and Population Board "to initiate and undertake population control programmes" (*1*).

As is well known, "family planning" is a euphemism for contraception. The family-planning approach to population limitation, therefore, concentrates on providing new and efficient contraceptives on a national basis through mass programs under public health auspices. The nature of these programs is shown by the following enthusiastic report from the Population Council (*2*):

> No single year has seen so many forward steps in population control as 1965. Effective national programs have at last emerged, international organizations have decided to become engaged, a new contraceptive has proved its value in mass application, . . . and surveys have confirmed a popular desire for family limitation. . .
>
> An accounting of notable events must begin with Korea and Taiwan . . . Taiwan's program is not yet two years old, and already it has inserted one IUD [intrauterine device] for every 4-6 target women (those who are not pregnant, lactating, already sterile, already using contraceptives effectively, or desirous of more children). Korea has done almost as well . . . has put 2,200 full-time workers into the field, . . . has reached operational levels for a network of IUD quotas, supply lines, local manufacture of contraceptives, training of hundreds of M.D.'s and nurses, and mass propaganda. . .

Here one can see the implication that "population control" is being achieved through the dissemination of new contraceptives, and the fact that the "target women" exclude those who want more children. One can also note the technological emphasis and the medical orientation.

What is wrong with such programs? The answer is, "Nothing at all, if they work." Whether or not they work depends on what they are expected to do as well as on how they try to do it. Let us discuss the goal first, then the means.

Goals

Curiously, it is hard to find in the population-policy movement any explicit discussion of long-range goals. By implication the policies seem to promise a great deal. This is shown by the use of expressions like *population control* and *population planning* (as in the passages quoted above). It is also shown by the characteristic style of reasoning. Expositions of current policy usually start off by lamenting the speed and the consequences of runaway population growth. This growth, it is then stated, must be curbed—by pursuing a vigorous family-planning program. That family planning can solve the problem of population growth seems to be taken as self-evident.

For instance, the much-heralded statement by 12 heads of state, issued by Secretary-General U Thant on 10 December 1966 (a statement initiated by John D. Rockefeller III, Chairman of the Board of the Population Council), devotes half its space to discussing the harmfulness of population growth and the other half to recommending family planning (*3*). A more succinct example of the typical reasoning is given in the Provisional Scheme for a Nationwide Family Planning Programme in Ceylon (*4*):

> The population of Ceylon is fast increasing. . . .[The] figures reveal that a serious situation will be created within a few years. In order to cope with it a Family Planning programme on a nationwide scale should be launched by the Government.

The promised goal—to limit population growth so as to solve population problems—is a large order. One would expect it to be carefully analyzed, but it is left imprecise and taken for granted, as is the way in which family planning will achieve it.

When the terms *population control* and *population planning* are used, as they frequently are, as synonyms for current family-planning programs, they are misleading. Technically, they would mean deliberate influence over all attributes of a population, including its age-sex structure, geographical distribution, racial composition, genetic quality, and total size. No government attempts such full control. By tacit understanding, current population policies are concerned with only the *growth* and *size* of populations. These attributes, however, result from the death rate and migration as well as from the birth rate; their control would require deliberate influence over the factors giving rise to all three determinants. Actually, current policies labeled population control do not deal with mortality and migration, but deal only with the birth input. This is why another term, *fertility control,* is frequently used to describe current policies. But, as I show below, family planning (and hence current policy) does not undertake to influence most of the determinants of human reproduction. Thus the programs should not be referred to as population control or planning, because they do not attempt to influence the factors responsible for the attributes of human populations, taken generally; nor should they be called fertility control, because they do not try to affect most of the determinants of reproductive performance.

The ambiguity does not stop here, however. When one speaks of controlling population size, any inquiring person naturally asks, What is "control"? Who is to control whom? Precisely what population size, or what rate of population growth, is to be achieved? Do the policies aim to produce a growth rate that is nil, one that is very slight, or one that is like that of the industrial nations? Unless such questions are dealt with and clarified, it is impossible to evaluate current population policies.

The actual programs seem to be aiming simply to achieve a reduction in the birth rate. Success is therefore interpreted as the accomplishment of such a reduction, on the assumption that the reduction will lessen population growth. In those rare cases where a specific demographic aim is stated, the goal is said to be a short-run decline within a given period. The Pakistan plan adopted in 1966 (*5*, p. 889) aims to reduce the birth rate from 50 to 40 per thousand by 1970; the Indian plan (*6*) aims to reduce the rate from 40 to 25 "as soon as possible"; and the Korean aim (*7*) is to cut population growth from 2.9 to 1.2 percent by 1980. A significant feature of such stated aims is the rapid population growth they would permit. Under conditions of modern mortality, a crude birth rate of 25 to 30 per thousand will represent such a multiplication of people as to make use of the term *population control* ironic. A rate of increase of 1.2 percent per year would allow South Korea's already dense population to double in less than 60 years.

One can of course defend the programs by saying that the present goals and measures are merely interim ones. A start must be made somewhere. But we do not find this answer in the population-policy literature. Such a defense, if convincing, would require a presentation of the *next* steps, and these are not considered. One suspects that the entire question of goals is instinctively left vague because thorough limitation of population growth would run counter

to national and group aspirations. A consideration of hypothetical goals throws further light on the matter.

Industrialized nations as the model. Since current policies are confined to family planning, their maximum demographic effect would be to give the underdeveloped countries the same level of reproductive performance that the industrial nations now have. The latter, long oriented toward family planning, provide a good yardstick for determining what the availability of contraceptives can do to population growth. Indeed, they provide more than a yardstick; they are actually the model which inspired the present population policies.

What does this goal mean in practice? Among the advanced nations there is considerable diversity in the level of fertility *(8)*. At one extreme are countries such as New Zealand, with an average gross reproduction rate (GRR) of 1.91 during the period 1960–64; at the other extreme are countries such as Hungary, with a rate of 0.91 during the same period. To a considerable extent, however, such divergencies are matters of timing. The birth rates of most industrial nations have shown, since about 1940, a wavelike movement, with no secular trend. The average level of reproduction during this long period has been high enough to give these countries, with their low mortality, an extremely rapid population growth. If this level is maintained, their population will double in just over 50 years—a rate higher than that of world population growth at any time prior to 1950, at which time the growth in numbers of human beings was already considered fantastic. The advanced nations are suffering acutely from the effects of rapid population growth in combination with the production of ever more goods per person *(9)*. A rising share of their supposedly high per capita income, which itself draws increasingly upon the resources of the underdeveloped countries (who fall farther behind in relative economic position), is spent simply to meet the costs, and alleviate the nuisances, of the unrelenting production of more and more goods by more people. Such facts indicate that the industrial nations provide neither a suitable demographic model for the nonindustrial peoples to follow nor the leadership to plan and organize effective population-control policies for them.

Zero population growth as a goal. Most discussions of the population crisis lead logically to zero population growth as the ultimate goal, because *any* growth rate, if continued, will eventually use up the earth. Yet hardly ever do arguments for population policy consider such a goal, and current policies do not dream of it. Why not? The answer is evidently that zero population growth is unacceptable to most nations and to most religious and ethnic communities. To argue for this goal would be to alienate possible support for action programs.

Goal peculiarities inherent in family planning. Turning to the actual measures taken, we see that the very use of family planning as the means for implementing population policy poses serious but unacknowledged limits on the intended reduction in fertility. The family-planning movement, clearly devoted to the improvement and dissemination of contraceptive devices, states again and again that its purpose is that of enabling couples to have the number of children they want. "The opportunity to decide the number and spacing of children is a basic human right," say the 12 heads of state in the United Nations declaration. The 1965 Turkish Law Concerning Population Planning declares *(10)*:

> *Article 1.* Population Planning means that individuals can have as many children as they wish, whenever they want to. This can be ensured through preventive measures taken against pregnancy. . . .

Logically, it does not make sense to use *family* planning to provide *national* population control or planning. The "planning" in family planning is that of each separate couple. The only control they exercise is control over the size of *their* family. Obviously, couples do not plan the size of the nation's population, any more than they plan the growth of the national income or the form of the highway network. There is no reason to expect that the millions of decisions about family size made by couples in their own interest will automatically control population for the benefit of society. On the contrary, there are good reasons to think they will not do so. At most, family planning can reduce reproduction to the extent that unwanted births exceed wanted births. In industrial countries the balance is often negative—that is, people have fewer children as a rule than they would like to have. In underdeveloped countries the reverse is normally true, but the elimination of unwanted births would still leave an extremely high rate of multiplication.

Actually, the family-planning movement does not pursue even the limited goals it professes. It does not fully empower couples to have only the number of offspring they want because it either condemns or disregards certain tabooed but nevertheless effective means to this goal. One of its tenets is that "there shall be freedom of choice of method so that individuals can choose in accordance with the dictates of their consciences" *(11)*, but in practice this amounts to limiting the individual's choice, because the "conscience" dictating the method is usually not his but that of religious and governmental officials. Moreover, not every individual may choose: even the so-called recommended methods are ordinarily not offered to single women, or not all offered to women professing a given religious faith.

Thus, despite its emphasis on technology, current policy does not utilize all available means of contraception, much less all birth-control measures. The Indian government wasted valuable years in the early stages of its population-control program by experimenting exclusively with the "rhythm" method, long after this technique had been demonstrated to be one of the least effective. A greater limitation on means is the exclusive emphasis on contraception itself. Induced abortion, for example, is one of the surest means of controlling reproduction, and one that has been proved capable of reducing birth rates rapidly. It seems peculiarly suited to the threshold stage of a population-control program—the stage when new conditions of life first make large families disadvantageous. It was the principal factor in the halving of the Japanese birth rate, a major factor in the declines in birth rate of East-European satellite countries after legalization of abortions in the early 1950's, and an important factor in the reduction of fertility in industrializing nations from 1870 to the 1930's *(12)*. Today, according to *Studies in Family Planning (13)*, "abortion is probably the foremost method of birth control throughout Latin America." Yet this method is rejected in nearly all national and international population-control programs. American foreign aid is used to help *stop* abortion *(14)*. The United Nations excludes abortion from family planning, and in fact justifies the latter by presenting it as a means of combating abortion *(15)*.

Studies of abortion are being made in Latin America under the presumed auspices of population-control groups, not with the intention of legalizing it and thus making it safe, cheap, available, and hence more effective for population control, but with the avowed purpose of reducing it (*16*).

Although few would prefer abortion to efficient contraception (other things being equal), the fact is that both permit a woman to control the size of her family. The main drawbacks to abortion arise from its illegality. When performed, as a legal procedure, by a skilled physician, it is safer than childbirth. It does not compete with contraception but serves as a backstop when the latter fails or when contraceptive devices or information are not available. As contraception becomes customary, the incidence of abortion recedes even without its being banned. If, therefore, abortions enable women to have only the number of children they want, and if family planners do not advocate—in fact decry—legalization of abortion, they are to that extent denying the central tenet of their own movement. The irony of anti-abortionism in family-planning circles is seen particularly in hair-splitting arguments over whether or not some contraceptive agent (for example, the IUD) is in reality an abortifacient. A Mexican leader in family planning writes (*17*):

> One of the chief objectives of our program in Mexico is to prevent abortions. If we could be sure that the mode of action [of the IUD] was not interference with nidation, we could easily use the method in Mexico.

The questions of sterilization and unnatural forms of sexual intercourse usually meet with similar silent treatment or disapproval, although nobody doubts the effectiveness of these measures in avoiding conception. Sterilization has proved popular in Puerto Rico and has had some vogue in India (where the new health minister hopes to make it compulsory for those with a certain number of children), but in both these areas it has been for the most part ignored or condemned by the family-planning movement.

On the side of goals, then, we see that a family-planning orientation limits the aims of current population policy. Despite reference to "population control" and "fertility control," which presumably mean determination of demographic results by and for the nation as a whole, the movement gives control only to couples, and does this only if they use "respectable" contraceptives.

The Neglect of Motivation

By sanctifying the doctrine that each woman should have the number of children she wants, and by assuming that if she has only that number this will automatically curb population growth to the necessary degree, the leaders of current policies escape the necessity of asking why women desire so many children and how this desire can be influenced (*18*, p. 41; *19*). Instead, they claim that satisfactory motivation is shown by the popular desire (shown by opinion surveys in all countries) to have the means of family limitation, and that therefore the problem is one of inventing and distributing the best possible contraceptive devices. Overlooked is the fact that a desire for availability of contraceptives is compatible with *high* fertility.

Given the best of means, there remain the questions of how many children couples want and of whether this is the requisite number from the standpoint of population size. That it is not is indicated by continued rapid population growth in industrial countries, and by the very surveys showing that people want contraception—for these show, too, that people also want numerous children.

The family planners do not ignore motivation. They are forever talking about "attitudes" and "needs." But they pose the issue in terms of the "acceptance" of birth control devices. At the most naive level, they assume that lack of acceptance is a function of the contraceptive device itself. This reduces the motive problem to a technological question. The task of population control then becomes simply the invention of a device that *will* be acceptable (*20*). The plastic IUD is acclaimed because, once in place, it does not depend on repeated *acceptance* by the woman, and thus it "solves" the problem of motivation (*21*).

But suppose a woman does not want to use *any* contraceptive until after she has had four children. This is the type of question that is seldom raised in the family-planning literature. In that literature, wanting a specific number of children is taken as complete motivation, for it implies a wish to control the size of one's family. The problem woman, from the standpoint of family planners, is the one who wants "as many as come," or "as many as God sends." Her attitude is construed as due to ignorance and "cultural values," and the policy deemed necessary to change it is "education." No compulsion can be used, because the movement is committed to free choice, but movie strips, posters, comic books, public lectures, interviews, and discussions are in order. These supply information and supposedly change values by discounting superstitions and showing that unrestrained procreation is harmful to both mother and children. The effort is considered successful when the woman decides she wants only a certain number of children and uses an effective contraceptive.

In viewing negative attitudes toward birth control as due to ignorance, apathy, and outworn tradition, and "mass-communication" as the solution to the motivation problem (*22*), family planners tend to ignore the power and complexity of social life. If it were admitted that the creation and care of new human beings is socially motivated, like other forms of behavior, by being a part of the system of rewards and punishments that is built into human relationships, and thus is bound up with the individual's economic and personal interests, it would be apparent that the social structure and economy must be changed before a deliberate reduction in the birth rate can be achieved. As it is, reliance on family planning allows people to feel that "something is being done about the population problem" without the need for painful social changes.

Designation of population control as a medical or public health task leads to a similar evasion. This categorization assures popular support because it puts population policy in the hands of respected medical personnel, but, by the same token, it gives responsibility for leadership to people who think in terms of clinics and patients, of pills and IUD's, and who bring to the handling of economic and social phenomena a self-confident naiveté. The study of social organization is a technical field; an action program based on intuition is no more apt to succeed in the control of human beings than it is in the area of bacterial or viral control. Moreover, to alter a social system, by deliberate policy, so as to regulate births in accord with the demands of the collective welfare would require political power, and

this is not likely to inhere in public health officials, nurses, midwives, and social workers. To entrust population policy to them is "to take action," but not dangerous "effective action."

Similarly, the Janus-faced position on birth-control technology represents an escape from the necessity, and onus, of grappling with the social and economic determinants of reproductive behavior. On the one side, the rejection or avoidance of religiously tabooed but otherwise effective means of birth prevention enables the family-planning movement to avoid official condemnation. On the other side, an intense preoccupation with contraceptive technology (apart from the tabooed means) also helps the family planners to avoid censure. By implying that the only need is the invention and distribution of effective contraceptive devices, they allay fears, on the part of religious and governmental officials, that fundamental changes in social organization are contemplated. Changes basic enough to affect motivation for having children would be changes in the structure of the family, in the position of women, and in the sexual mores. Far from proposing such radicalism, spokesmen for family planning frequently state their purpose as "protection" of the family—that is, closer observance of family norms. In addition, by concentrating on *new* and *scientific* contraceptives, the movement escapes taboos attached to old ones (the Pope will hardly authorize the condom, but may sanction the pill) and allows family planning to be regarded as a branch of medicine: overpopulation becomes a disease, to be treated by a pill or a coil.

We thus see that the inadequacy of current population policies with respect to motivation is inherent in their overwhelmingly family-planning character. Since family planning is by definition private planning, it eschews any societal control over motivation. It merely furnishes the means, and, among possible means, only the most respectable. Its leaders, in avoiding social complexities and seeking official favor, are obviously activated not solely by expediency but also by their own sentiments as members of society and by their background as persons attracted to the family-planning movement. Unacquainted for the most part with technical economics, sociology, and demography, they tend honestly and instinctively to believe that something they vaguely call population control can be achieved by making better contraceptives available.

The Evidence of Ineffectiveness

If this characterization is accurate, we can conclude that current programs will not enable a government to control population size. In countries where couples have numerous offspring that they do not want, such programs may possibly accelerate a birth-rate decline that would occur anyway, but the conditions that cause births to be wanted or unwanted are beyond the control of family planning, hence beyond the control of any nation which relies on family planning alone as its population policy.

This conclusion is confirmed by demographic facts. As I have noted above, the widespread use of family planning in industrial countries has not given their governments control over the birth rate. In backward countries today, taken as a whole, birth rates are rising, not falling; in those with population policies, there is no indication that the government is controlling the rate of reproduction. The main "successes" cited in the well-publicized policy literature are cases where a large number of contraceptives have been distributed or where the program has been accompanied by some decline in the birth rate. Popular enthusiasm for family planning is found mainly in the cities, or in advanced countries such as Japan and Taiwan, where the people would adopt contraception in any case, program or no program. It is difficult to prove that present population policies have even speeded up a lowering of the birth rate (the least that could have been expected), much less that they have provided national "fertility control."

Let us next briefly review the facts concerning the level and trend of population in underdeveloped nations generally, in order to understand the magnitude of the task of genuine control.

Rising Birth Rates in Underdeveloped Countries

In ten Latin-American countries, between 1940 and 1959 (*23*), the average birth rates (age-standardized), as estimated by our research office at the University of California, rose as follows: 1940–44, 43.4 annual births per 1000 population; 1945–49, 44.6; 1950–54, 46.4; 1955–59, 47.7.

In another study made in our office, in which estimating methods derived from the theory of quasi-stable populations were used, the recent trend was found to be upward in 27 underdeveloped countries, downward in six, and unchanged in one (*24*). Some of the rises have been substantial, and most have occurred where the birth rate was already extremely high. For instance, the gross reproduction rate rose in Jamaica from 1.8 per thousand in 1947 to 2.7 in 1960; among the natives of Fiji, from 2.0 in 1951 to 2.4 in 1964; and in Albania, from 3.0 in the period 1950–54 to 3.4 in 1960.

The general rise in fertility in backward regions is evidently not due to failure of population-control efforts, because most of the countries either have no such effort or have programs too new to show much effect. Instead, the rise is due, ironically, to the very circumstance that brought on the population crisis in the first place—to improved health and lowered mortality. Better health increases the probability that a woman will conceive and retain the fetus to term; lowered mortality raises the proportion of babies who survive to the age of reproduction and reduces the probability of widowhood during that age (*25*). The significance of the general rise in fertility, in the context of this discussion, is that it is giving would-be population planners a harder task than many of them realize. Some of the upward pressure on birth rates is independent of what couples do about family planning, for it arises from the fact that, with lowered mortality, there are simply more couples.

Underdeveloped Countries with Population Policies

In discussions of population policy there is often confusion as to which cases are relevant. Japan, for instance, has been widely praised for the effectiveness of its measures, but it is a very advanced industrial nation and, besides, its government policy had little or nothing to do with the decline in the birth rate, except unintentionally. It therefore offers no test of population policy under peasant-agrarian conditions. Another case of questionable relevance is that of Taiwan, because Taiwan is sufficiently developed to be placed in the urban-industrial class of nations. However, since Taiwan is offered as the main showpiece by the sponsors of current policies in underdeveloped areas, and since the data are excellent, it merits examination.

Taiwan is acclaimed as a showpiece

Table 1. Decline in Taiwan's fertility rate, 1951 through 1966.

Year	Registered births per 1000 women aged 15–49	Change in rate (percent)*
1951	211	
1952	198	−5.6
1953	194	−2.2
1954	193	−0.5
1955	197	+2.1
1956	196	−0.4
1957	182	−7.1
1958	185	+1.3
1959	184	−0.1
1960	180	−2.5
1961	177	−1.5
1962	174	−1.5
1963	170	−2.6
1964	162	−4.9
1965	152	−6.0
1966	149	−2.1

* The percentages were calculated on unrounded figures. Source of data through 1965, *Taiwan* Demographic Fact Book (1964, 1965); for 1966, *Monthly Bulletin of Population Registration Statistics of Taiwan* (1966, 1967).

because it has responded favorably to a highly organized program for distributing up-to-date contraceptives and has also had a rapidly dropping birth rate. Some observers have carelessly attributed the decline in the birth rate —from 50.0 in 1951 to 32.7 in 1965— to the family-planning campaign (*26*), but the campaign began only in 1963 and could have affected only the end of the trend. Rather, the decline represents a response to modernization similar to that made by all countries that have become industrialized (*27*). By 1950 over half of Taiwan's population was urban, and by 1964 nearly two-thirds were urban, with 29 percent of the population living in cities of 100,000 or more. The pace of economic development has been extremely rapid. Between 1951 and 1963, per capita income increased by 4.05 percent per year. Yet the island is closely packed, having 870 persons per square mile (a population density higher than that of Belgium). The combination of fast economic growth and rapid population increase in limited space has put parents of large families at a relative disadvantage and has created a brisk demand for abortions and contraceptives. Thus the favorable response to the current campaign to encourage use of the IUD is not a good example of what birth-control technology can do for a genuinely backward country. In fact, when the program was started, one reason for expecting receptivity was that the island was already on its way to modernization and family planning (*28*).

At most, the recent family-planning campaign—which reached significant proportions only in 1964, when some 46,000 IUD's were inserted (in 1965 the number was 99,253, and in 1966, 111,242) (*29*; *30*, p. 45)—could have caused the increase observable after 1963 in the rate of decline. Between 1951 and 1963 the average drop in the birth rate per 1000 women (see Table 1) was 1.73 percent per year; in the period 1964–66 it was 4.35 percent. But one hesitates to assign all of the acceleration in decline since 1963 to the family-planning campaign. The rapid economic development has been precisely of a type likely to accelerate a drop in reproduction. The rise in manufacturing has been much greater than the rise in either agriculture or construction. The agricultural labor force has thus been squeezed, and migration to the cities has skyrocketed (*31*). Since housing has not kept pace, urban families have had to restrict reproduction in order to take advantage of career opportunities and avoid domestic inconvenience. Such conditions have historically tended to accelerate a decline in birth rate. The most rapid decline came late in the United States (1921–33) and in Japan (1947–55). A plot of the Japanese and Taiwanese birth rates (Fig. 1) shows marked similarity of the two curves, despite a difference in level. All told, one should not attribute all of the post-1963 acceleration in the decline of Taiwan's birth rate to the family-planning campaign.

The main evidence that *some* of this acceleration is due to the campaign comes from the fact that Taichung, the city in which the family-planning effort was first concentrated, showed subsequently a much faster drop in fertility than other cities (*30*, p. 69; *32*). But the campaign has not reached throughout the island. By the end of 1966, only 260,745 women had been fitted with an IUD under auspices of the campaign, whereas the women of reproductive age on the island numbered 2.86 million. Most of the reduction in fertility has therefore been a matter of individual initiative. To some extent the campaign may be simply substituting sponsored (and cheaper) services for those that would otherwise come through private and commercial channels. An island-wide survey in 1964 showed that over 150,000 women were already using the traditional Ota ring (a metallic intrauterine device popular in Japan); almost as many had been sterilized; about 40,000 were using foam tablets; some 50,000 admitted to having had at least one abortion; and

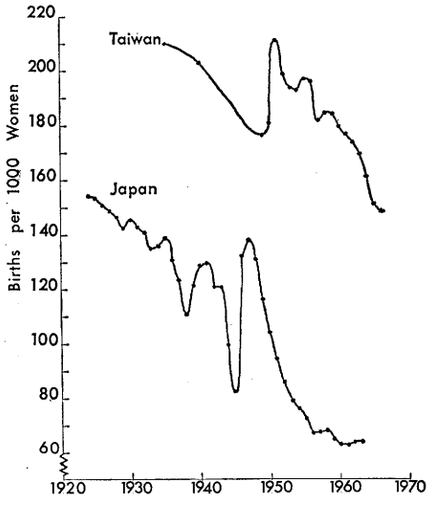

Fig. 1. Births per 1000 women aged 15 through 49 in Japan and Taiwan.

many were using other methods of birth control (*30*, pp. 18, 31).

The important question, however, is not whether the present campaign is somewhat hastening the downward trend in the birth rate but whether, even if it is, it will provide population control for the nation. Actually, the campaign is not designed to provide such control and shows no sign of doing so. It takes for granted existing reproductive goals. Its aim is "to integrate, through education and information, the idea of family limitation *within the existing attitudes, values, and goals* of the people" [*30*, p. 8 (italics mine)]. Its target is *married* women who do not want any more children; it ignores girls not yet married, and women married and wanting more children.

With such an approach, what is the maximum impact possible? It is the difference between the number of children women have been having and the number they want to have. A study in 1957 found a median figure of 3.75 for the number of children wanted by women aged 15 to 29 in Taipei, Taiwan's largest city; the corresponding figure for women from a satellite town was 3.93; for women from a fishing village, 4.90; and for women from a farming village, 5.03. Over 60 percent of the women in Taipei and over 90 percent of those in the farming village wanted 4 or more children (*33*). In a sample of wives aged 25 to 29 in Taichung, a city of over 300,000, Freedman and his co-workers found the average number of children wanted was 4; only 9 percent wanted less than 3, 20 percent wanted 5 or more (*34*). If, therefore, Taiwanese women used

contraceptives that were 100-percent effective and had the number of children they desire, they would have about 4.5 each. The goal of the family-planning effort would be achieved. In the past the Taiwanese woman who married and lived through the reproductive period had, on the average, approximately 6.5 children; thus a figure of 4.5 would represent a substantial decline in fertility. Since mortality would continue to decline, the population growth rate would decline somewhat less than individual reproduction would. With 4.5 births per woman and a life expectancy of 70 years, the rate of natural increase would be close to 3 percent per year (*35*).

In the future, Taiwanese views concerning reproduction will doubtless change, in response to social change and economic modernization. But how far will they change? A good indication is the number of children desired by couples in an already modernized country long oriented toward family planning. In the United States in 1966, an average of 3.4 children was considered ideal by white women aged 21 or over (*36*). This average number of births would give Taiwan, with only a slight decrease in mortality, a long-run rate of natural increase of 1.7 percent per year and a doubling of population in 41 years.

Detailed data confirm the interpretation that Taiwanese women are in the process of shifting from a "peasant-agrarian" to an "industrial" level of reproduction. They are, in typical fashion, cutting off higher-order births at age 30 and beyond (*37*). Among young wives, fertility has risen, not fallen. In sum, the widely acclaimed family-planning program in Taiwan may, at most, have somewhat speeded the later phase of fertility decline which would have occurred anyway because of modernization.

Moving down the scale of modernization, to countries most in need of population control, one finds the family-planning approach even more inadequate. In South Korea, second only to Taiwan in the frequency with which it is cited as a model of current policy, a recent birth-rate decline of unknown extent is assumed by leaders to be due overwhelmingly to the government's family-planning program. However, it is just as plausible to say that the net effect of government involvement in population control has been, so far, to delay rather than hasten a decline in reproduction made inevitable by social and economic changes. Although the government is advocating vasectomies and providing IUD's and pills, it refuses to legalize abortions, despite the rapid rise in the rate of illegal abortions and despite the fact that, in a recent survey, 72 percent of the people who stated an opinion favored legalization. Also, the program is presented in the context of maternal and child health; it thus emphasizes motherhood and the family rather than alternative roles for women. Much is made of the fact that opinion surveys show an overwhelming majority of Koreans (89 percent in 1965) favoring contraception (*38*, p. 27), but this means only that Koreans are like other people in wishing to have the means to get what they want. Unfortunately, they want sizable families: "The records indicate that the program appeals mainly to women in the 30–39 year age bracket who have four or more children, including at least two sons . . ." (*38*, p. 25).

In areas less developed than Korea the degree of acceptance of contraception tends to be disappointing, especially among the rural majority. Faced with this discouragement, the leaders of current policy, instead of reexamining their assumptions, tend to redouble their effort to find a contraceptive that will appeal to the most illiterate peasant, forgetting that he wants a good-sized family. In the rural Punjab, for example, "a disturbing feature . . . is that the females start to seek advice and adopt family planning techniques at the fag end of their reproductive period" (*39*). Among 5196 women coming to rural Punjabi family-planning centers, 38 percent were over 35 years old, 67 percent over 30. These women had married early, nearly a third of them before the age of 15 (*40*); some 14 percent had eight or more *living* children when they reached the clinic, 51 percent six or more.

A survey in Tunisia showed that 68 percent of the married couples were willing to use birth-control measures, but the average number of children they considered ideal was 4.3 (*41*). The corresponding averages for a village in eastern Java, a village near New Delhi, and a village in Mysore were 4.3, 4.0, and 4.2, respectively (*42, 43*). In the cities of these regions women are more ready to accept birth control and they want fewer children than village women do, but the number they consider desirable is still wholly unsatisfactory from the standpoint of population control. In an urban family-planning center in Tunisia, more than 600 of 900 women accepting contraceptives had four living children already (*44*). In Bangalore, a city of nearly a million at the time (1952), the number of offspring desired by married women was 3.7 on the average; by married men, 4.1 (*43*). In the metropolitan area of San Salvador (350,000 inhabitants) a 1964 survey (*45*) showed the number desired by women of reproductive age to be 3.9, and in seven other capital cities of Latin America the number ranged from 2.7 to 4.2. If women in the cities of underdeveloped countries used birth-control measures with 100-percent efficiency, they still would have enough babies to expand city populations senselessly, quite apart from the added contribution of rural-urban migration. In many of the cities the difference between actual and ideal number of children is not great; for instance, in the seven Latin-American capitals mentioned above, the ideal was 3.4 whereas the actual births per women in the age range 35 to 39 was 3.7 (*46*). Bombay City has had birth-control clinics for many years, yet its birth rate (standardized for age, sex, and marital distribution) is still 34 per 1000 inhabitants and is tending to rise rather than fall. Although this rate is about 13 percent lower than that for India generally, it has been about that much lower since at least 1951 (*47*).

Is Family Planning the "First Step" in Population Control?

To acknowledge that family planning does not achieve population control is not to impugn its value for other purposes. Freeing women from the need to have more children than they want is of great benefit to them and their children and to society at large. My argument is therefore directed not against family-planning programs as such but against the assumption that they are an effective means of controlling population growth.

But what difference does it make? Why not go along for awhile with family planning as an initial approach to the problem of population control? The answer is that any policy on which millions of dollars are being spent should be designed to achieve the goal it purports to achieve. If it is only a first step, it should be so labeled, and its connection with the next step (and the nature of that next step) should be carefully examined. In the present case,

since no "next step" seems ever to be mentioned, the question arises, Is reliance on family planning in fact a basis for dangerous postponement of effective steps? To continue to offer a remedy as a cure long after it has been shown merely to ameliorate the disease is either quackery or wishful thinking, and it thrives most where the need is greatest. Today the desire to solve the population problem is so intense that we are all ready to embrace any "action program" that promises relief. But postponement of effective measures allows the situation to worsen.

Unfortunately, the issue is confused by a matter of semantics. "Family *planning*" and "fertility *control*" suggest that reproduction is being regulated according to some rational plan. And so it is, but only from the standpoint of the individual couple, not from that of the community. What is rational in the light of a couple's situation may be totally irrational from the standpoint of society's welfare.

The need for societal regulation of individual behavior is readily recognized in other spheres—those of explosives, dangerous drugs, public property, natural resources. But in the sphere of reproduction, complete individual initiative is generally favored even by those liberal intellectuals who, in other spheres, most favor economic and social planning. Social reformers who would not hesitate to force all owners of rental property to rent to anyone who can pay, or to force all workers in an industry to join a union, balk at any suggestion that couples be permitted to have only a certain number of offspring. Invariably they interpret societal control of reproduction as meaning direct police supervision of individual behavior. Put the word *compulsory* in front of any term describing a means of limiting births—*compulsory sterilization, compulsory abortion, compulsory contraception*—and you guarantee violent opposition. Fortunately, such direct controls need not be invoked, but conservatives and radicals alike overlook this in their blind opposition to the idea of collective determination of a society's birth rate.

That the exclusive emphasis on family planning in current population policies is not a "first step" but an escape from the real issues is suggested by two facts. (i) No country has taken the "next step." The industrialized countries have had family planning for half a century without acquiring control over either the birth rate or population increase. (ii) Support and encouragement of research on population policy other than family planning is negligible. It is precisely this blocking of alternative thinking and experimentation that makes the emphasis on family planning a major obstacle to population control. The need is not to abandon family-planning programs but to put equal or greater resources into other approaches.

New Directions in Population Policy

In thinking about other approaches, one can start with known facts. In the past, all surviving societies had institutional incentives for marriage, procreation, and child care which were powerful enough to keep the birth rate equal to or in excess of a high death rate. Despite the drop in death rates during the last century and a half, the incentives tended to remain intact because the social structure (especially in regard to the family) changed little. At most, particularly in industrial societies, children became less productive and more expensive (*48*). In present-day agrarian societies, where the drop in death rate has been more recent, precipitate, and independent of social change (*49*), motivation for having children has changed little. Here, even more than in industrialized nations, the family has kept on producing abundant offspring, even though only a fraction of these children are now needed.

If excessive population growth is to be prevented, the obvious requirement is somehow to impose restraints on the family. However, because family roles are reinforced by society's system of rewards, punishments, sentiments, and norms, any proposal to demote the family is viewed as a threat by conservatives and liberals alike, and certainly by people with enough social responsibility to work for population control. One is charged with trying to "abolish" the family, but what is required is selective restructuring of the family in relation to the rest of society.

The lines of such restructuring are suggested by two existing limitations on fertility. (i) Nearly all societies succeed in drastically discouraging reproduction among unmarried women. (ii) Advanced societies unintentionally reduce reproduction among married women when conditions worsen in such a way as to penalize childbearing more severely than it was penalized before. In both cases the causes are motivational and economic rather than technological.

It follows that population-control policy can de-emphasize the family in two ways: (i) by keeping present controls over illegitimate childbirth yet making the most of factors that lead people to postpone or avoid marriage, and (ii) by instituting conditions that motivate those who do marry to keep their families small.

Postponement of Marriage

Since the female reproductive span is short and generally more fecund in its first than in its second half, postponement of marriage to ages beyond 20 tends biologically to reduce births. Sociologically, it gives women time to get a better education, acquire interests unrelated to the family, and develop a cautious attitude toward pregnancy (*50*). Individuals who have not married by the time they are in their late twenties often do not marry at all. For these reasons, for the world as a whole, the average age at marriage for women is negatively associated with the birth rate: a rising age at marriage is a frequent cause of declining fertility during the middle phase of the demographic transition; and, in the late phase, the "baby boom" is usually associated with a return to younger marriages.

Any suggestion that age at marriage be raised as a part of population policy is usually met with the argument that "even if a law were passed, it would not be obeyed." Interestingly, this objection implies that the only way to control the age at marriage is by direct legislation, but other factors govern the actual age. Roman Catholic countries generally follow canon law in stipulating 12 years as the minimum *legal* age at which girls may marry, but the actual average age at marriage in these countries (at least in Europe) is characteristically more like 25 to 28 years. The actual age is determined, not by law, but by social and economic conditions. In agrarian societies, postponement of marriage (when postponement occurs) is apparently caused by difficulties in meeting the economic prerequisites for matrimony, as stipulated by custom and opinion. In industrial societies it is caused by housing shortages, unemployment, the requirement for overseas military service, high costs of education, and inadequacy of consumer services. Since almost no research has been devoted to the subject, it is difficult to assess the relative weight of the factors that govern the age at marriage.

Encouraging Limitation of Births within Marriage

As a means of encouraging the limitation of reproduction within marriage, as well as postponement of marriage, a greater rewarding of nonfamilial than of familial roles would probably help. A simple way of accomplishing this would be to allow economic advantages to accrue to the single as opposed to the married individual, and to the small as opposed to the large family. For instance, the government could pay people to permit themselves to be sterilized (*51*); all costs of abortion could be paid by the government; a substantial fee could be charged for a marriage license; a "child-tax" (*52*) could be levied; and there could be a requirement that illegitimate pregnancies be aborted. Less sensationally, governments could simply reverse some existing policies that encourage childbearing. They could, for example, cease taxing single persons more than married ones; stop giving parents special tax exemptions; abandon income-tax policy that discriminates against couples when the wife works; reduce paid maternity leaves; reduce family allowances (*53*); stop awarding public housing on the basis of family size; stop granting fellowships and other educational aids (including special allowances for wives and children) to married students; cease outlawing abortions and sterilizations; and relax rules that allow use of harmless contraceptives only with medical permission. Some of these policy reversals would be beneficial in other than demographic respects and some would be harmful unless special precautions were taken. The aim would be to reduce the number, not the quality, of the next generation.

A closely related method of deemphasizing the family would be modification of the complementarity of the roles of men and women. Men are now able to participate in the wider world yet enjoy the satisfaction of having several children because the housework and childcare fall mainly on their wives. Women are impelled to seek this role by their idealized view of marriage and motherhood and by either the scarcity of alternative roles or the difficulty of combining them with family roles. To change this situation women could be required to work outside the home, or compelled by circumstances to do so. If, at the same time, women were paid as well as men and given equal educational and occupational opportunities, and if social life were organized around the place of work rather than around the home or neighborhood, many women would develop interests that would compete with family interests. Approximately this policy is now followed in several Communist countries, and even the less developed of these currently have extremely low birth rates (*54*).

That inclusion of women in the labor force has a negative effect on reproduction is indicated by regional comparisons (*18*, p. 1195; *55*). But in most countries the wife's employment is subordinate, economically and emotionally, to her family role, and is readily sacrificed for the latter. No society has restructured both the occupational system and the domestic establishment to the point of permanently modifying the old division of labor by sex.

In any deliberate effort to control the birth rate along these lines, a government has two powerful instruments—its command over economic planning and its authority (real or potential) over education. The first determines (as far as policy can) the economic conditions and circumstances affecting the lives of all citizens; the second provides the knowledge and attitudes necessary to implement the plans. The economic system largely determines who shall work, what can be bought, what rearing children will cost, how much individuals can spend. The schools define family roles and develop vocational and recreational interests; they could, if it were desired, redefine the sex roles, develop interests that transcend the home, and transmit realistic (as opposed to moralistic) knowledge concerning marriage, sexual behavior, and population problems. When the problem is viewed in this light, it is clear that the ministries of economics and education, not the ministry of health, should be the source of population policy.

The Dilemma of Population Policy

It should now be apparent why, despite strong anxiety over runaway population growth, the actual programs purporting to control it are limited to family planning and are therefore ineffective. (i) The goal of zero, or even slight, population growth is one that nations and groups find difficult to accept. (ii) The measures that would be required to implement such a goal, though not so revolutionary as a Brave New World or a Communist Utopia, nevertheless tend to offend most people reared in existing societies. As a consequence, the goal of so-called population control is implicit and vague; the method is only family planning. This method, far from de-emphasizing the family, is familistic. One of its stated goals is that of helping sterile couples to *have* children. It stresses parental aspirations and responsibilities. It goes along with most aspects of conventional morality, such as condemnation of abortion, disapproval of premarital intercourse, respect for religious teachings and cultural taboos, and obeisance to medical and clerical authority. It deflects hostility by refusing to recommend any change other than the one it stands for: availability of contraceptives.

The things that make family planning acceptable are the very things that make it ineffective for population control. By stressing the right of parents to have the number of children they want, it evades the basic question of population policy, which is how to give societies the number of children they need. By offering only the means for *couples* to control fertility, it neglects the means for societies to do so.

Because of the predominantly pro-family character of existing societies, individual interest ordinarily leads to the production of enough offspring to constitute rapid population growth under conditions of low mortality. Childless or single-child homes are considered indicative of personal failure, whereas having three to five living children gives a family a sense of continuity and substantiality (*56*).

Given the existing desire to have moderate-sized rather then small families, the only countries in which fertility has been reduced to match reduction in mortality are advanced ones temporarily experiencing worsened economic conditions. In Sweden, for instance, the net reproduction rate (NRR) has been below replacement for 34 years (1930–63), if the period is taken as a whole, but this is because of the economic depression. The average replacement rate was below unity (NRR = 0.81) for the period 1930–42, but from 1942 through 1963 it was above unity (NRR = 1.08). Hardships that seem particularly conducive to deliberate lowering of the birth rate are (in managed economies) scarcity of housing and other consumer goods despite full employment, and required high partici-

pation of women in the labor force, or (in freer economies) a great deal of unemployment and economic insecurity. When conditions are good, any nation tends to have a growing population.

It follows that, in countries where contraception is used, a realistic proposal for a government policy of lowering the birth rate reads like a catalogue of horrors: squeeze consumers through taxation and inflation; make housing very scarce by limiting construction; force wives and mothers to work outside the home to offset the inadequacy of male wages, yet provide few child-care facilities; encourage migration to the city by paying low wages in the country and providing few rural jobs; increase congestion in cities by starving the transit system; increase personal insecurity by encouraging conditions that produce unemployment and by haphazard political arrests. No government will institute such hardships simply for the purpose of controlling population growth. Clearly, therefore, the task of contemporary population policy is to develop attractive substitutes for family interests, so as to avoid having to turn to hardship as a corrective. The specific measures required for developing such substitutes are not easy to determine in the absence of research on the question.

In short, the world's population problem cannot be solved by pretense and wishful thinking. The unthinking identification of family planning with population control is an ostrich-like approach in that it permits people to hide from themselves the enormity and unconventionality of the task. There is no reason to abandon family-planning programs; contraception is a valuable technological instrument. But such programs must be supplemented with equal or greater investments in research and experimentation to determine the required socioeconomic measures.

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49. K. Davis, *Amer. Economic Rev.* **46**, 305 (1956); *Sci. Amer.* **209**, 68 (1963).
50. J. Blake, *World Population Conference* [*Belgrade, 1965*] (United Nations, New York, 1967), vol. 2, pp. 132–36.
51. S. Enke, *Rev. Economics Statistics* **42**, 175 (1960); ———, *Econ. Develop. Cult. Change* **8**, 339 (1960); ———, *ibid.* **10**, 427 (1962); A. O. Krueger and L. A. Sjaastad, *ibid.,* p. 423.
52. T. J. Samuel, *J. Family Welfare India* **13**, 12 (1966).
53. Sixty-two countries, including 27 in Europe, give cash payments to people for having children [U.S. Social Security Administration, *Social Security Programs Throughout the World, 1967* (Government Printing Office, Washington, D.C., 1967), pp. xxvii-xxviii].
54. Average gross reproduction rates in the early 1960's were as follows: Hungary, 0.91; Bulgaria, 1.09; Romania, 1.15; Yugoslavia, 1.32.
55. O. A. Collver and E. Langlois, *Econ. Develop. Cult. Change* **10**, 367 (1962); J. Weeks, [Univ. of California (Berkeley)], unpublished paper.
56. Roman Catholic textbooks condemn the "small" family (one with fewer than four children) as being abnormal [J. Blake, *Population Studies* **20**, 27 (1966)].

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