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Toward A Restatement of Demographic Transition Theory

JOHN C. CALDWELL

Our interpretation of past population movements and our expectations about future trends rest primarily on a body of observations and explanations known as "demographic transition theory." The conventional wisdom of this theory has had a deep impact and guides the work programs of international organizations, technical assistance decisions by governments, and popular analyses in the media.

The theory has changed little in the last 20 years. Indeed the period has seen a plethora of analyses of differentials in fertility, especially those found in contemporary American society, which have tended to obscure the all-important distinction between the origins of fertility decline and the subsequent demographic history of societies experiencing such decline.[1] This failure to update the theory is curious because the last two decades have provided researchers with far more experience of pretransitional and early transitional societies than they had previously been able to obtain.

It is also unfortunate because it has led to unnecessary misunderstandings, misinterpretations, and frustrations. It will be argued here that an inadequate understanding of the way in which birth levels first begin to fall has led both to premature gloom about the success of family planning programs and unnecessary hysteria about the likely long-term size of the human race, as well as to antagonisms at such forums as the Bucharest World Population Conference between countries at different stages of demographic transition.

Development and Testing of the Theory

The thrust of the paper is that there are only two types of fertility regime, with the exception of the situation at the time of transition: one where there is no economic gain to individuals from restricting fertility; and the second where there is often or eventually economic gain from such restriction. In both situations behavior is not only rational but economically rational. Another corollary is that there is not a whole range of economically rational levels of fertility in different societies, but instead only two situations, the first where the economically rational response is an indefinitely large number of children and the second where it is to be childless. It is admitted that in many societies at different times there is not a steep economic gradient between different levels of fertility; however, maximum and minimum family sizes in these societies are determined by personal, social, and physiological reasons, not economic ones. Further, it will be posited that the movement from a society characterized by economically unrestricted fertility to a society characterized by economically restricted fertility is essentially the product of social, rather than economic, change, although with economic implications. It will also be argued that the forces sustaining economically unrestricted fertility are frequently strengthened by economic modernization unaccompanied by specific types of social change and that this is the explanation for sustained high fertility in a situation in which "modernization"—urbanization, increase in the proportion of nonagricultural production, and so on—is demonstrably occurring. The social revolution—one of familial relationships and particularly of the direction of intrafamilial flows of wealth dictated by familial obligations—need not by its nature accompany economic modernization. However, it almost inevitably will occur either simultaneously with, or to a considerable degree preceding and perhaps hastening, economic modernization in the contemporary world. This is due largely to the phenomenon of Westernization, an essentially social process with a range of mechanisms for its spread (which have depended on economic advance in the West and to a more limited extent elsewhere, but which have not been dictated or formed by economic growth).[2]

The discussion will cover three types of society: (1) primitive societies where food gatherers, nomadic pastoralists or agriculturalists live in largely self-sufficient communities feeling little or no impact from a national state or a world religion; (2) traditional societies, predominantly agrarian, where the apparatus of a state government or the attitudes, and often the structure, of an organized religion make an impact on both community and individuals, especially in giving guarantee of safety or assistance; (3) transitional societies where rapid change in way of life

towards that followed by people in lands with a "modern" economy usually in recent times has been catalyzed by outside contacts. It will be maintained that, at least in the contemporary world, the supports for unlimited fertility finally crumble in the transitional society, and that the analysis of this crumbling and of its preconditions is largely unrelated to the analysis of the frequently slow and sometimes vicissitudinous reduction in family size that subsequently occurs in transitional and modern societies. Much of the argument draws primarily on African examples, both because of my experience in Africa, and because all three types of society are well represented on the continent.

Demographic Transition Theory

By the end of the nineteenth century it was common knowledge that fertility levels were falling in many Western countries and there was a presumption that birth rates would stabilize at lower levels (although there was no agreement about what the new levels would mean in terms of natural increase). An attempt was made by Warren Thompson in 1929 to divide this transition into three phases and by C. P. Blacker in 1947 to distinguish five phases.[3] Neither could be said to be the father of demographic transition theory in that neither suggested an explanation for fertility change.

Modern demographic transition theory was born almost in mature form in a paper written by Frank Notestein in 1945. Notestein offered a twofold explanation for why fertility had begun to decline. Fertility in premodern countries had been kept, if not artificially high, then high only by the maintenance of a whole series of props: "religious doctrines, moral codes, laws, education, community customs, marriage habits and family organizations . . . all focused towards maintaining high fertility."[4] High fertility was necessary for survival because otherwise the very high mortality rate would have led to population decline and extinction. But eventually in country after country mortality began to decline, and the props were no longer needed or were not needed at their original strength. One could leave the explanation here and argue that the props would inevitably wither, as social adjustments were made in response to other changes. However, Notestein put forward the view that, in the West at least, more positive forces (arising out of the same process of modernization that had brought the death rates down) were at work destroying the props. Fundamental was "the growth of huge and mobile city populations," which tended to dissolve the largely corporate, family-based way of life of traditional society, replacing it with individualism marked above all by growing personal aspirations. Large families became

"a progressively difficult undertaking; expensive and difficult for a population increasingly freed from older taboos and increasingly willing to solve its problems rather than accept them."[5]

Again in 1953 Notestein pointed to the "urban industrial society" as the crucible of demographic transition and stated, "It is difficult to avoid the conclusion that the development of technology lies at the root of the matter." Once again he placed emphasis on the erosion of the traditional family, "particularly the extended family," and on the growth of individualism, but he also drew attention to other important social movements: "the development of a rational and secular point of view; the growing awareness of the world and modern techniques through popular education; improved health; and the appearance of alternatives to early marriage and childbearing as a means of livelihood and prestige for women." However, this time the description of pretransitional society was not drawn largely from the experience of the West but was generalized to include the developing world:

> The economic organization of relatively self-sufficient agrarian communities turns almost wholly upon the family, and the perpetuation of the family is the main guarantee of support and elemental security. When death rates are high the individual's life is relatively insecure and unimportant. The individual's status in life tends to be that to which he was born. There is, therefore, rather little striving for advancement. Education is brief, and children begin their economic contributions early in life. In such societies, moreover, there is scant opportunity for women to achieve either economic support or personal prestige outside the roles of wife and mother, and women's economic functions are organized in ways that are compatible with continuous childbearing.[6]

The mainstream arguments of the theory are that fertility is high in poor, traditional societies because of high mortality, the lack of opportunities for individual advancement, and the economic value of children. All these things change with modernization or urban industrialism, and individuals, once their viewpoints become reoriented to the changes that have taken place, can make use of the new opportunities.[7]

The argument appears at first clear and convincing, but it has elements and implications that are more complex or debatable and that have had an enormous effect on our way of looking at demographic change. The most fundamental issue is whether the theory actually deals with reactions and accommodations to material circumstances. There is a persistent strain in demographic transition theory writings that claims that rationality comes only with industrial, urban society, and a related strain that regards traditional agrarian societies as essentially brutish and superstitious. This arises in two distinct ways.

The first is from the references to pre-demographic-transition society.

The concept of the brutishness of the poor, and their inability and unwillingness to help themselves, is a fundamental proposition of Malthus. But the origin of the view in modern demographic transition theory is the argument that, in spite of the high mortality, insecurity, and lack of cost of children in pre-demographic-transition societies, all kinds of religious and social institutions and preserves were needed to keep fertility high. This is why demographic transition literature is full of references not to the behavior or reactions of such people but to *attitudes, beliefs, traditions,* and *irrationality.* Kingsley Davis wrote of the contrast between traditional societies and "the growing rationalism of modern life" and, again, describing sex and reproduction in the former, that "towards this aspect of life the woman has mainly a nonrational approach—religious, supersitious and incurious"[8]; George Stolnitz described "a shift in attitudes from the traditional fatalism of peasant societies"[9]; Eva Mueller observed that, "it is difficult to influence deep-seated attitudes"[10]; William Rich believed that "large-scale fertility declines cannot be expected until the living conditions of the majority of the population improve enough so that they no longer *consider* large families necessary for economic reasons"[11]; Stephen Enke deduced that, "many simple peoples understand very little about why reproduction occurs and how it can be prevented"[12]; Michael Endres has written recently, "people directed by tradition resist rational intervention and choice between behavioral patterns," and "to urge upon a traditional people a rational technical means of birth control is to challenge the tenacious hold of a hard-won culture to which choice and change are the enemy"[13]; while G. T. Trewartha indicted the irrationality of premodern society for causing not only high fertility but also maldistribution of settlement: "Indeed, much of the distribution does not appear to be particularly rational . . . Tradition, which is unusually strong among the tribal peoples of Negro Africa, plays a more than ordinary role."[14]

The second respect in which an implicit assumption of pretransition irrationality enters into the theory is through references to cultural lags in making fertility adjustments to the arrival of the new urban, industrial conditions. Such references are plausible in a way because a period of change is under consideration instead of an extended stable situation. Several of the quotations above do refer also to such lags, but the concept is both implicit and explicit in Notestein's 1945 paper. There he argued that the supports for high fertility "change only gradually and in response to the strongest stimulation" and described "a population increasingly freed from older taboos and increasingly willing to solve its problems rather than accept them."[15]

That the central tradition of demographic transition theory is still very much that of Notestein's 1945 and 1953 formulations and that the belief in increasing rationality with modernization is still an integral

element has been demonstrated vividly by the publication of the most recent United Nations *Population Studies,* which justifies the latest United Nations population projections. The argument is worth quoting at some length:

> The entire process of economic and social development . . . itself changes people's outlooks from traditions and fatalism towards modern concepts and rationalism. . . . The past record in the more developed countries demonstrates . . . that it [fertility decline] can . . . be expected to occur in the normal course of the modern development process . . . the deliberate regulation of fertility defies age-old custom. . . . A high frequency of childbirth . . . was necessary for the continuation and security of families and this found emphatically strong support in the prevailing values and customs. In many cultures it has also been considered that children provide a much needed insurance against destitution in old age. Associated with such cultural norms has been the regard for women in their seemingly principal function as bearers and rearers of children, limiting thereby their participation in economic and social roles held to be mainly the prerogative of men. Interwoven with such attitudes there can also be a fatalistic refusal, or even an abhorrence, to contemplate any regulatory interference with the reproductory process. It is not to be wondered at that such a traditional outlook on life can be highly resistant to change. But as shown by the earlier experience of the more developed regions . . . change is possible or eventually to be expected.[16]

Much of the argument for demographic transition concepts as they are now widely held turns on the definition of rational. The term "economically rational" is frequently substituted so as to avoid having to judge "social rationality" with the possibility of having to agree that a certain mode of behavior was rational in a given setting in that it met the ends of religious beliefs or of community obligations. Even so, the criteria employed are highly ethnocentric and are laden with Western values. It is assumed that it is rational for a man or a couple to maximize the expenditure on the individuals in his or their nuclear family; but there are any number of non-Western societies in which there is greater pleasure in spending on some relatives outside the nuclear family (adult brothers for instance) than on some within it, and in which children are happier to spend on parents than are parents on children. Obviously the fundamental choices are social ones and economic behavior is rational only insofar as it is rational within the framework established by social ends. What demographic transition theory has always regarded as rational are primarily Western social ends with economically logical steps to maximize satisfactions given those ends.

The underlying assumption of this study is that all societies are economically rational. The point is a simple one, but its acceptance is absolutely necessary if we are to arrive at an adequate theory of demo-

graphic transition, if we are to understand the contemporary population changes, and if we are going to make adequate predictions for planning purposes. It is, in fact, difficult to have a rigorous analysis on any other assumption. Social ends differ but can be largely explained on a rational basis—usually even in economic terms. Furthermore, change in social ends can often be observed, measured, explained, and predicted. The view that the fertility behavior of the Third World arises largely from ignorance and should be combatted with education and guidance is held strongly by many family planning movements and leads to friction and even confrontation; the same reaction arising out of much the same origins was witnessed writ a little larger at the Bucharest Conference. Indeed the view that peasants are usually mistaken in evaluating the effect of their fertility on their own economic well-being has recently been seriously argued in a paper by Mueller.[17]

A second implication of demographic transition theory, at least as originally conceived by Notestein, is that industrialization and concomitant urbanization are preconditions to development. Notestein placed stress on "urban industrial living" (in 1945) and later on "urban industrial society" (in 1953), as the context in which the social changes leading to fertility decline occur. Similarly Thompson (in 1946) referred to "industrialization" as the necessary condition. In the last 20 years such terms have largely been replaced by "modernization" or near synonyms like "the modern development process" as it became clear that great numbers of people in the Third World were unlikely to be living in industrial cities for generations. The demographic transition theory did allow for the possibility that the new way of life and the consequent new fertility behavior might be generated in the urban industrial setting and then be exported to nonurban and nonindustrial populations either by exporting some of its institutions (such as schools, women's rights legislation or a full market economy) or by simply exporting its attitudes or ideas. This tenet received historical support from the decline in fertility among rural populations in the West. The theory did not specify whether the urban industrial melting pot from which the changes were derived had to be in the same society or whether a global economy and society was beginning to operate that could export the necessary ideas and institutions from the economically developed countries to the commercial cities of Asia and Africa and on to the rural hinterlands. (Demonstrably this has long been happening with regard to governmental institutions and more recently in terms of schools and political ideology.) In any case the link with the emphasis on the props for high fertility is clear. If high fertility in developing countries were a wholly rational response to economic circumstances, then the small family pattern could never be exported; but, if the large family were to a considerable extent the product of beliefs and attitudes sustained largely by religion and shib-

boleth in order to compete with high mortality rather than to meet the needs of the economic system, then export was quite possible. Those who doubted the validity of a theory based only on the transmission of ideas but who were prepared to accept the possibility that the spread of small families could be achieved by the spread of institutions made little progress in identifying those institutions that were minimally necessary for fertility transition—schools? nonagricultural employment?

A third problem lurked in demographic transition theory but was not specifically identified. Was it primarily modernization that was being exported? Is there a specific form of social modernization that is a necessary adjunct to economic modernization? Or is the export Westernization, which by historical accident has been tailored to fit the world's first economic modernization and which is easily exportable partly because of the West's economic strength (clearly visible in its earlier ability to colonize) and partly because this tailoring makes it easily adaptable to modernizing economies? Notestein wrestled with problem areas in his 1953 paper and the whole question of Westernization almost arose: why had fertility fallen steeply between World Wars I and II in almost wholly agricultural Bulgaria while failing to do so during the 1950s in the larger urban areas of Egypt and the Far East?[18]

Suggested Modifications to the Theory Without actually saying as much, Davis argued in 1955 and again, with Judith Blake, in 1956 that the props were not needed. High fertility was a perfectly rational response to socioeconomic conditions in a traditional agrarian society: the extended family means that the cost and care of children are shared; children, once past infancy, may in fact pay for their costs, especially in conditions of cottage industry, but more generally in any farming situation; both husbands' and wives' families of origin may help establish the newly married couple, often on a farm of their own; large families may bring economic strength through political strength in the local decision-making organizations.[19]

Recently this aspect of the demographic transition debate has been summarized and evaluated by Thomas Burch and Murray Gendell, who demonstrated that research findings from India and Taiwan fail to show the predicted fertility contrasts between families residing as nuclear families and those living together in larger agglomerations of relatives.[20] The point is an important one, and, in order to clear the way for the subsequent argument in this paper, should be dealt with here. The research in India and Taiwan is almost certainly irrelevant for three reasons, of which the second is most important. The first is that survey or census data do not accurately measure even residential family size. The building materials, mud and stone in contrast to bamboo and thatch for instance, often determine whether considerable numbers of people can be housed

in a single structure or alternatively in several smaller structures adjacent or close by. The second (a point to be elaborated later) is that family residence arrangements have little or nothing to do with the true extended family of mutual obligations, at least as long as residence outside the traditional community is not specified. It is the size and ramifications of this family of obligations that may well help to determine fertility. The third is that family residential patterns are often a function of the life cycle; in some societies nuclear residence is most likely to be found immediately after husband and wife (often with children of their own by this time) first move away from their parents to a farm or business of their own. What demographers should really be interested in are the families of this type who are unlikely to subsequently attract or retain many other relatives (except perhaps aged parents or nephews and nieces undergoing education) often because they have moved to a city or have been fairly highly educated and so have opted for a different way of life from their relatives.

Family sociologists added some riders to the picture. William Goode decided that the nuclear family's fundamental demographic characteristic was not that it leaned toward small size but that it was more flexible than the extended family in reacting to economic conditions favoring high or low fertility; thus at much the same time (eighteenth and early nineteenth centuries) European populations had chosen high fertility in frontier North America and moderate fertility in their homelands in Europe.[21] This had, of course, been a major contention of Malthus. Some, Colin Clark, for example, went further and identified nuclear families with advanced economies and extended families with nonindustrial societies—probably, as will be argued later, a fundamental mistake at least in terms of European history.[22]

Another attack on the props came from David Heer and Dean Smith who argued that the props had at every stage been wholly rational because of high mortality and had withered as the death rates fell.[23]

Recent Ideas An important contribution in the 1950s was that of the economists, especially Ansley Coale and Edgar Hoover in 1958 with a major analysis of India, together with Mexico. What is apt to be overlooked is that Coale and Hoover accepted as their starting point the existing demographic transition theory,[24] and that most of the subsequent economic analysis is independent of theories about when and if fertility is likely to fall. Coale and Hoover spelled out the economic implications of transition theory but they did not test its basic assumptions. Their analyses were essentially those of macroscopic data, and their main conclusion was that national economic growth is impaired if fertility levels too greatly exceed mortality levels. However, most nonspecialists received the message that they had shown convincingly that high fertility is

economically disadvantageous for every size of population unit, and the view that high-fertility agrarian families were behaving irrationally was given a powerful boost.

It is possible to extrapolate part of the argument from national populations to individual families: to suggest that lower fertility will produce a family age structure with a higher ratio of potential adult producers to child consumers than will high fertility and that fewer children will allow mothers to participate more in economic activity.[25] For reasons analyzed below all these arguments ring somewhat hollowly in an actual agrarian society: children work at young ages; often the peasant's analysis is dynamic in contrast to the demographer's static one in that the peasant is thinking less of the present and more of safeguarding the future; and, in many societies, the peasant's wife already works long hours (freed from minding the product of her recent fertility by the child care being practiced by the product of her earlier fertility).

Two years before Coale and Hoover's study appeared, R. Nelson had produced his "low-level equilibrium trap model." Subsequently Harvey Liebenstein made the model more specifically demographic, suggesting that in "backward areas" people are merely caught by circumstances: they lack the inducement to save or invest and are unlikely to make quantum jumps in technology; as a result, per capita income remains static, mortality does not decline, and, hence, population does not grow.[26] The model does imply at least short-term rationality, although it could also be taken to mean that the society as a whole was incapable of planning its course to a better future. A more important limitation is that the model seems to have no real significance for social theory (except for historical studies) in a world where societies are no longer isolated from each other and where imported health technology means that population is growing increasingly fast, even in many societies with largely subsistence economies.

In 1974 Julian Simon summarized and assessed much of the research evidence available on fertility and stage of economic development, concluding that "fertility is everywhere subject to much rational control." He largely avoided the question of why—within this framework of rational decision—fertility decline sets in, contenting himself with pragmatically observing that "we may rely on the fact that, as education rises, fertility will fall" and that "if one wishes to reduce fertility, one should think about raising educational levels as well as aiding birth control."[27]

Since the 1950s, sociologists have contributed powerfully—not always intentionally—to the thesis of irrationality by apparently showing a substantial gap between desired and achieved fertility in the Third World (together with a smaller gap in developed economies). The origin of this formulation dated from the beginning of fertility studies, when the Indianapolis Survey of 1941 asked American respondents what they

considered the ideal family size. The concept of "norms" had been one of the basic planks of modern sociology, and in the early 1960s Ronald Freedman applied it to fertility studies in a way that seemed to have implications not only for behavioral rationality but for behavioral economic rationality: "family size norms will tend to correspond to a number which maximizes the net utility to be derived from having children in the society or stratum." In developing countries, he concluded, "there may be a delicate balance of pressures towards higher fertility to ensure at least a certain minimum number of children and counter pressures to minimize or eliminate an intolerable surplus of children under difficult subsistence conditions."[28]

During the mid–1960s, knowledge, attitude, and practice (KAP) surveys were used to measure desired or "ideal family size" in the developing world using questions about the "best" or "ideal" number of children or the family size that would be desired if the respondent were to start her reproductive history all over again. Comparisons made in 1965 between "desired" and actual fertility prompted W. Parker Mauldin to state, "although it is not yet true that people in the developing areas share the small family ideal, it is true that most of them no longer want very large families,"[29] and Bernard Berelson to calculate that, while ideal family size in the United States was 97 percent of the achieved size, it ranged in a number of developing countries between 60 and 92 percent.[30]

The whole question of ideal family size is of the utmost importance for the discussion of demographic transition theory in this paper. It is not necessary to regard the gap between ideal and achieved size as evidence of irrational behavior; indeed Berelson regarded it as arising from "lack of information, services and supplies" and this was the most common position taken during the 1960s by technical aid organizations in the family planning field. Indeed the significant gap—that created by the props, according to demographic transition theory—is essentially that between the family size which would be dictated by economically rational behavior and ideal family size. In fact there is little relationship between the demographic transition concern with the attainment of economic rationality and the KAP study attention to ideal family size; KAP studies essentially attempt to measure potential consumer demand, and in this they ignore the issue of rationality except to the extent that it seems reasonable for a person to do what he wants to do. Some researchers appear to take it for granted, however, that a movement in ideals is almost inevitably a movement toward rationality and, hence, evidence of the decay of the props.

There are three fundamental questions.

The first is whether there are "norms" at all in the high-fertility situation. It will be argued here that economically there is no ceiling in primitive and traditional societies to the number of children who would be

economically beneficial; the actual number is kept down because physiological and social problems arise from too frequent childbirth and the failure to cease childbearing at a certain stage. Achieved fertility is a product of this conflict and can hardly be described as approximating a norm.[31]

The second question is whether fertility behavior must be regarded as mainly economically motivated, or whether social motivations are also important or even dominant—whether norms, if they exist, and fertility behavior can be taken as an approximate measure of the individual's reaction to economic circumstances. Simon argues that fertility can be taken to be primarily economically motivated and justifies "an important omission [from his study] . . . , social norms and values. The reason . . . is that in the context of long-run analysis, culture and values do *not* have independent lives of their own."[32] This, it will be noted, is a direct assault on the props. This proposition differs from that put forward in this paper in that the argument here is that fertility is economically rational only between certain limits that are set by noneconomic factors; that there are two types of society, one in which it is economically rational for fertility to be ever lower, but in which a floor is interposed by noneconomic considerations, and the other, in which it is rational for it to be ever higher, restrained only by a noneconomic ceiling.

The third question is whether fertility can be used as a measure of desired behavior. The apparent demonstration by the KAP surveys that there is a wide gulf between what Third World people want to do and what they succeed in doing introduced a large element of chance (and not random chance at that) into the whole matter. It is perhaps impossible to study the motivation behind fertility decline if the populations of the Third World habitually exhibit fertility well above what both economic rationality and the attitudes molded by the props dictate. I suggest that this apparent gap is partly the product of the present unusual circumstances, but largely an artifact of the method of investigation. Change is at present so rapid in many societies that there is a fast increase in the number of people who will economically benefit from lower fertility. However, the "ideal family" questions ultimately fail to measure likely fertility behavior even under conditions of adequate access to contraception because they are imported almost undigested from Western society and contain a range of assumptions about non-Western societies that will not bear up under examination. The fundamental problem is the questioning of a woman about the "best" number of children, as if the chief cultural thrust were optimization of family size instead of a range of other concerns such as meeting the expectations of husband and other relatives, conforming with peer group behavior, and so on. In many surveys most respondents probably do not fully understand the question. They know what the words mean, but they also know that they are being

asked to define "best" in a modernizing sense by interviewers (and, behind them, some institution) who interpret "best" in a futuristic sense or in the sense of the elites. The "politeness response" is only a small part of the reaction.[33] The "ideal family" question was shaped by Western, middle-class researchers, living in conjugal families in which husbands and wives consult each other over matters of reproduction and sex, and it achieves its greatest reliability among such people. In this paper it will be taken that achieved fertility everywhere comes close to being a rational response to the circumstances of the society.

In 1965 the publication of a United Nations study directed the attention of researchers to the prime importance of the changing conditions that lead to fertility decline at a point identified as the "threshold." The analysis distinguished six levels of fertility, in what was essentially a cross-sectional and not an historical analysis, but for further analysis combined the levels into two groups, one in which relatively low fertility had been achieved and the other in which it had not. Every Asian and African population, except Japan, was in the high-fertility group, while, with the exception of Albania, every European population in Europe, North America, and Oceania was in the low-fertility group. In Latin America, only Argentina and Uruguay were among the low-fertility countries. The United Nations recognized that it was "perhaps no coincidence that most of the countries where fertility is low . . . are in Europe and European-settled regions," concluding that "fertility levels might . . . be due . . . at least partly to culturally determined circumstances affecting the interactions between fertility and economic and social changes."[34] This dichotomy had the disadvantage that the nations identified as being beyond the threshold had in many cases passed it long ago; and neither the nature of the actual threshold nor the changes sufficient to ensure movement across it were actually detected.[35]

Other attempts to apply or develop threshold analysis have been made. Etienne van de Walle and John Knodel failed to find it a usable tool when analyzing fertility decline in France and Germany.[36] Dudley Kirk proclaimed the value of such an approach in 1971, and in 1975, together with Frank Oechsli, applied it to Latin America, calculating a "Development Index" and relating it to declines in both mortality and fertility.[37] But Oechsli and Kirk's data unmistakably evidence a cultural dichotomy: most of the countries with reduced fertility either are areas of almost purely European settlement in the extreme south or are Caribbean Islands with very mixed cultures and population origins. Island nations have been conspicuous in recent fertility declines, and the United Nations has identified ten and attempted to explain the change in terms of their small size and hence the easy penetration of ideas and health measures.[38] Yet seven of the island nations were settled entirely by immigrant populations while under European control: Réunion, Jamaica,

Mauritius, Trinidad and Tobago, Guadeloupe, Martinique and Puerto Rico; one has been entirely Christianized: American Samoa; one is a mixture of an immigrant population and a fully Christianized indigenous one: Fiji; and one has achieved universal Western-style education: Sri Lanka.

In contrast to the approach of the thresholders, there has recently been renewed interest in the innovational explanation. (In the late nineteenth and early twentieth centuries, governments and other institutions almost invariably explained fertility control innovationally, as the spread of pernicious ideas.) Much of this has arisen from the Princeton Office of Population Research European fertility project and its demonstration that fertility declines spread fairly rapidly through linguistic or religious units only to be halted at their borders.[39]

The threshold and innovational approaches share a common problem in explaining the onset of fertility decline. Their data are usually for considerable aggregates of population, and, hence, it is difficult to determine whether the measured drop in fertility is attributable to a single socioeconomic group or not. If it is, then the threshold explanation holds up (provided that the threshold indices are meant to apply to subsections of a society), but the spread of innovation is shown to have an impact only on groups that have already reached some potential state of receptivity as measured by socioeconomic indices and not by attitudinal changes; if it is not, then the threshold indices can be discarded as measures of the sufficient conditions that must be met for demographic change to occur. In any case both approaches have failed as yet to specify the kinds of changes necessary for individuals or couples to alter their fertility behavior and why such alterations take place.

Attempts have of course been made to investigate these changes around the beginning of transition, the most ambitious to date for developing countries being the East-West Population Institute's Value of Children Study.[40] So far the published national reports (on the Philippines and Hawaii) have had a strong social psychological orientation toward beliefs and values—stronger even than the questionnaires upon which they are based. The approach is clearly an aspect of innovational theory and has a good deal in common with explanations that rely heavily on the props; and, although it does not spell it out, the Philippines report could be described as an analysis of the import and diffusion of nonindigenous cultural values. So far, the project has insufficiently investigated the changing material aspects of life and the extent to which changing values could be said to be rationally moving parallel to economic realities.

New Experience Increasingly massive family planning programs in Asia and parts of Africa, Latin America, and Oceania over the last

quarter of a century have presented an enormous increase in opportunities to watch and measure fertility transition and to identify the innovators. This should have allowed demographic transition theory to be rewritten with the sureness that arises from large-scale field experiments. This has not happened, and one of the keys to the whole problem may be why it has not happened.

An important reason is undoubtedly described by the well-known precept in other areas of endeavor: applied science has increasingly limited returns, unless based on continuing fundamental research. Too much of the research has taken as its starting point and framework the preexisting conclusions of demographic transition theory. Too many frustrated family planning fieldworkers and administrators have been only too willing to blame the props for the failure to achieve program targets. Most indigenous and all expatriate administrators and advisors are in circumstances in which they economically benefit from controlling their own fertility, and they find it hard to understand why this should not be so for everyone else—irrationality is an easy answer especially when it can be demonstrated that education and demand for the family planning services are highly positively correlated. Probably too much of the research has been program-based instead of concentrating on the mechanisms of change in the society as a whole. Yet this is not the whole explanation. The operational research has permitted the identification of large numbers of innovators—at least in terms of using contraception, if not always in terms of deciding to restrict family size—but research has not clearly established the basic changes that have affected these people. On the face of it this seems hard to believe, and yet it is true for a number of reasons. One (as will be seen below) is that the innovators do not really know themselves; they differ in various ways from their parents and these differences make fertility control rational, but they usually cannot identify the essential differences. Another reason for the failure to identify preconditions is that comparison of the characteristics of family planning acceptors and nonacceptors shows that the former are much more likely to exhibit not merely one "modern" characteristic but a whole interrelated set (more education, nonagricultural employment, higher incomes, and so on), so that there is a chicken-and-egg problem. There has also been a research failure: failure to investigate in detail the way of life and circumstances of individual acceptors parallel to similar studies of the population as a whole.

In relation to the last point it might be noted that there has been over the last half century a considerable advance in economic anthropology, which has been almost entirely ignored by demographers.[41] Fierce debate has raged in economic anthropology between the Formalists and the Substantivists, the former claiming that Western economic analysis can be applied unchanged to all economic life and the latter

maintaining that economics serves social ends and that every culture has its own economic theory. The Formalists narrowly define the subject of modern economics as allocation of scarce resources between either unlimited or numerous ends, while the Substantivists contend that rational economic behavior is rational only within a given social context and that these contexts are diverse and often startlingly different from those of the modern West. The Substantivists have also established that, even where money and markets exist, these may embrace only part of a society, and, more importantly, only part of the life of much of the population. The rest of the society, and perhaps the bulk of the life of most of its citizens, falls in the more traditional sector, where it is not rational, and usually not possible, to act out the life of market-economy man. The implications for demographic transition theory are that transition is made possible only by profound changes in the social structures of such societies, and that analyses of the economic rationality of high fertility reach different conclusions in different social structures.

Fundamental Problems of Research Part of the failure to advance demographic transition theory can undoubtedly be blamed on inadequate research. The basic problem has not been inadequate methodology but rather poor application, especially in the application of methods in cultures other than those for which they were developed. The problems will only be summarized here as they have been treated more adequately elsewhere. The general failing, and one that encompasses the others, has been ethnocentricity. Too much research has been done too quickly and on too large a scale with research instruments, and often researchers, brought directly from contemporary Western society. Too often, the representatives of the non-Western society in the research have been completely inculcated with Western research approaches and conclusions in Western universities. As a result, the research approach often predetermines the range of findings and asks questions that provide the appropriate answers almost by an echo effect.[42] What prevents the researcher from worrying about the extent to which the pattern of responses fails to represent the society is the magnitude and flow-chart nature of modern social scientific research: the large sample, the hierarchy of command, the precoded questionnaire, the responses as invisible magnetic recordings on a computer tape, computer editing, the computer print-outs of marginals and cross-tabulations that necessarily balance to the last unit, the written report in a predetermined pattern, and finally the cross-cultural international comparison with other research using similar or even identical instruments.

Four pitfalls of current research have particularly contributed to misunderstanding of the nature of demographic transition.

1. The magnitude and direction of wealth (money, goods, services, guarantees) flows and potential flows are areas of research that are often neglected or misunderstood. Such research is difficult. In premodern societies much of the wealth is still outside the monetized economy. Often money-equivalents are not visualized; services usually have an element of obligation; investments in future security may be discounted in the opposite direction to that to which Western economics is accustomed (discussed further below); the details about wealth have often not been disclosed even to immediate relatives (who exert competing demands and from whom details must often be hidden, more to prevent resentment and to allow equity to prevail, than to deprive people of their just deserts); and there is sometimes also a fear about tax officials and other authorities knowing about earnings. In these circumstances, small-scale, painstakingly thorough research is needed by investigators with a thorough knowledge of the society. Hardly any good research has yet been done. There is a temptation to quote inadequate or incomplete research, with highly misleading results. There would be less danger if the errors were random, but, without question, there is a great understatement of all flows of wealth and potential wealth.

2. The "family" of the fertility survey is often an artifact of the survey. Women are asked about their own reactions and their husbands' reactions, and of course, the women answer in these terms. No one describes the role in decision-making of the husbands' and wives' lineages; no one explains that the husband regards his brother as a nearer relation than his wife in the sense of that close inner circle where one no longer regards expenditure as depriving one personally of wealth; no one explains the intricate system of decision-making and obligations that may far exceed the nuclear family or residential group and in which the nuclear family may not even be a recognizable subunit.

3. The nature of family formation and of related decisions in developing countries is frequently misunderstood. Family size decisions are usually out of the respondents' hands for several reasons: both the physiological side of reproduction and the obeying of cultural practices may seem (sensibly enough) to them to be something they cannot control and hence there is an element of fatalism; family size is often the product of decisions taken for family reasons not primarily aimed at determining fertility; and, where there are decisions to be made, they may not be primarily decisions of the "couple." All these factors must be taken into account when interpreting "Up to God" and "Don't know" responses, which may be closer to the truth than the numerical ones. In these circumstances the value of any "ideal family" type of question is debatable, and the employment of the concept of "norms" misleading.

4. While fertility transition research is essentially a study of change, such investigations have been impeded by too much emphasis on modernization. Change can be understood only if emphasis is given to studying the fundamental nature of the society that is being subjected to new forces. Too many survey questions are focused on the modernizing features, and too many of them have a built-in assumption that everyone is reaching for such change. Demographers have been far too rarely concerned with familiarizing themselves

with the knowledge other social scientists have already accumulated about the society being examined. Perhaps even more serious is the fact that modernization has been accorded such respect (by all development researchers, but specifically by population researchers, in that they regard modernization as being the chief mechanism for reducing fertility and hence eventually containing global population growth) that its components have usually not been analyzed and the all-important distinction has not been made between Westernization, which may proceed at a rate unrelated to economic change, and residual modernization, which must go hand in hand with economic change because it is either a necessary condition or a necessary product.

What we obtain from research that is vitiated by these weaknesses is a reflection of the way a poorer version of our own society might be expected to behave if set down in a Third World context. We fail to appreciate significantly different social and economic structures and the extent to which these yield rewards to the highly fertile.

A Society Experiencing Change

The observations in this section are primarily of Nigerian Yoruba society. The Yoruba are the indigenous inhabitants of Nigeria's Western State (recently subdivided into Ogun, Ondo, and Oyo States) and Lagos State, as well as considerable parts of Kwara State in Nigeria and Southern Benin, or Dahomey. The Western and Lagos States are believed to have contained about 8.5 million people in 1962[43] and contain perhaps 13 million now, of whom over 11 million are Yoruba, out of a total of 13 million Yoruba in Nigeria and Benin. The Yoruba of the Western and Lagos States have been the focus of the largest segment of the Changing African Family Project and of the Nigerian Family Study, and many of the data used here are drawn from that study.[44] The area is well suited to this kind of investigation, because a primitive society (as defined here) existed over most of it until the latter part of the nineteenth century (and aspects of it can still be studied in any rural area); the traditional society is now paramount; and some of the population—largely the urban population and especially the middle classes of the cities (Lagos probably has over 2 million inhabitants and Ibadan 750,000)—are part of transitional society.

The Primitive Society A primitive society is one in which the largest organizational institution is the tribe, the clan, or the village. No overall responsibility is taken by the larger apparatus of State or Church, which means that security within the groupings that exist is not augmented or guaranteed by an outside entity. Indeed, security outside the group is

minimal; nearly everyone continues to live among their people of origin; and the size of that group is often the measure of safety.

Several aspects of such a society are of prime importance for understanding all pre-demographic-transition societies.

Perhaps the foremost is that the society or economy (for they cannot be separated) of the group is a single system in which the participants have time-honored roles and duties. There is usually communal land (which is essential in nomadic, food-gathering, and most shifting-cultivation systems); residence in propinquity to large numbers of people—mostly relatives—with whom one has lived all one's life; government by these same people; and a simple economy where much cooperation is needed for the larger tasks. The absolute right of individual ownership is unknown. In fact economic relations and social relationships intermingle. Edward Evans-Pritchard wrote of the Sudan, "One cannot treat Nuer economic relations by themselves, for they always form part of direct social relationships of a general kind,"[45] and C. K. Meek of Nigeria, "One of the main distinctions between Native systems of holding land and those of Western societies is that the former are largely dominated by personal relationships, whereas the latter are subject to the impersonal legal conception of 'contract'."[46] Marshall Sahlins summarized the position as, "A material transaction is usually a momentary episode in continuous social relations."[47] Transactions and gifts are not in fact markedly differentiated, especially as the latter are almost invariably also the cause of two-way flows of wealth.

Gifts of goods or services and later reciprocation allow the creation of a security system of mutual obligations (which will be dealt with in this review of the primitive society, even though such systems are of fundamental economic and demographic importance in traditional and transitional societies and survive even into modern society[48]). In all primitive and most traditional societies the maximization of profit or other ends in good times is of small importance compared with the minimization of risks (which often means ensuring survival) in bad times. Describing the Fulbe (or Fulani) of northern Nigeria, C. Edward Hopen reported that they "have an almost pathological concern (and often fear) for the future. Their conversation abounds with such expressions as 'tojaango' (what of tomorrow) and 'gam jaango' (because of tomorrow). . . . The prospect of a secure and relatively care-free old age under the care of their sons will often restrain young women from deserting or divorcing their husbands. Both men and women in many respects show a remarkable disposition to forego present convenience (or pleasure) in the interests of future benefit."[49] Such attitudes are universally reported by field researchers, even among the businessmen of Ghana's capital, Accra.[50]

The fertility implications are obvious. It is in such conditions, where

one lives with almost all one's relations and possibly with other families whose ancestors have dwelt near one's own for generations, and where one has no other social environment and no other source of cooperation, and where social organization tends towards gerontocracy, that it is inconceivable that the nuclear family should crystallize out and that such a unit should attempt to gain economic advantage over other units.[51]

It is the survival of the extended family system as economic change occurs that helps to sustain high fertility. This survival is rendered more likely by a system of mechanisms that retain the full rigor of the extended family system even through the primitive and traditional societies. After the observations above, it might seem unlikely that primitive society would need such mechanisms, yet they exist throughout sub-Saharan Africa.[52] The reason is society's awareness that conjugal sexual relations can intensify conjugal emotional relationships, and that parent-child emotions can also become of overriding importance. Therefore, African cultures successfully weaken both types of relationship, because communal residence and occupational cooperation would be endangered if men listened to what their wives said was in their mutual interest rather than what their brothers or fathers said, while matrilineal societies would disintegrate if preference were to be shown for sons and daughters over nephews and nieces. In fact (and this is important in terms of demographic transition), relationships between spouses, even in monogamous marriages, are not very strong in traditional Yoruba society and parents do not exclusively focus their attention on their biological children. Even in 1973 only one-third of Yoruba spouses slept in the same room or ever ate together (admittedly indexes of affection regarded as less significant by Yorubas than by outsiders), and fewer still identified the person to whom they felt closest as their spouse, while children were commonly brought up by a number of kinsmen.[53] This should be seen in the context of traditional Yoruba residence in extended family compounds, which persisted even in Ibadan until only a few years ago.

Networks of relatives are important in the primitive society and remain so in the traditional society. They increase the size of the security system and of the cooperating group in less serious situations; they increase the number of close allies in the political contest in the traditional political system in which success is due to the ability to tap more or better communal resources; they increase the number of relatives who can attend family ceremonies and hence magnify one's social importance and sheer consumption pleasure. In rural Yoruba society it is still taken as one of the immutable facts of existence that family numbers, political strength, and affluence are not only interrelated but are one and the same thing. Furthermore, such a base still forms an excellent springboard to success for young aspirants in the modern sector of the economy.[54] There are only two ways of increasing the size of one's network of relatives and

they are interrelated: by reproduction and by the marriage of one's children. Data from the second survey in the Nigerian segment of the Changing African Family Project show that 80 percent of all Yoruba still hold that children are either better than wealth or are wealth, while those who maintain that on balance they consume wealth fall to 6 percent in rural areas; 96 percent agree that increasing the number of relatives by means of marriage is a good thing and 83 percent that they can ask relatives by marriage for help with material things or services to a greater extent than they can ask nonrelatives.

But, if this is the way to wealth and power, why do extra children not press more on resources, especially on the supply of food? The question seems to have no meaning in most primitive societies and in traditional society among the Yoruba, even in densely settled rural areas or among urban populations. Part of the answer is that each new pair of hands helps to feed the extra mouth (to paraphrase the kind of proverb that seems to be found widely in Africa and Asia). Part is the nature of the communal economy, where "a man does not acquire more objects than he can use; were he to do so he could only dispose of them by giving them away."[55] Indeed, in such an economy underuse of resources may be far more common than pressure upon them, a situation generalized in Sahlins' rephrasing of Chayanov's rule: "the intensity of labour varies inversely to the relative working capacity of the producing unit [i.e. the household or family]."[56] Lorimer constructed a model for agrarian societies, which apparently showed that, even if belt-tightening was caused in some families by the birth of extra children, it was only to a small extent while the children were young.[57] Less than one-fifth of Yoruba respondents in the second survey of the Nigerian segment of the Changing African Family Project believed that the birth of an extra child would have even an immediate impoverishing effect.

African children certainly work (except perhaps in the transitional society), beginning at age 5–7 years, as they imitate ever more what their elders of the same sex do. It is often difficult, even among adults, to distinguish work completely from way of life. Nevertheless, the traditional patriarch appreciated that work had to be done, that it was often onerous, and that more could be done and others could perhaps take a larger share of the burden if the family were large. C. Edward Hopen relates that he discussed with a Fulani of northern Nigeria whether the Fulani, who supposedly are filled with joy by fathering large families, would have many children in the happy Moslem Heaven that they describe, only to be told: "No, why will we want children? All the work will be done by the servants of Allah."[58] Pierre de Schlippe, reporting on the Zande of south-west Sudan states that, "The prestige of extensive fields and full granaries was to a great extent achieved by family despotism," including "cruel punishments inflicted on wives and children."[59] This is not now

the case among either the Zande or the Yoruba, but in rural areas wives and children obey male instructions to work (see below on the question of schoolchildren). Yoruba children work as they have always done helping to provide nonmarket goods and services, as well as helping with market production. That a man benefits economically in such a society by polygyny is now widely affirmed[60]; it is a small step from this to recognizing that he also gains if he has a large number of children.

Traditional Society In Yoruba society the difference between primitive and traditional society is hardly worth making when analyzing demographic trends; but the establishment of the latter was undoubtedly the necessary precursor for fertility change in the transitional society. However, this has not been the case in all traditional societies, many of which evolved slowly over a long period,[61] and indeed the beginning of fertility transition can almost certainly be found in Europe at a time when it was still very largely premodern. State and Church, long before the advent of the Welfare State, were able to provide some assurance that they would intervene to try to prevent unnecessary deaths at times of community disaster—in Europe, with intermissions, since the time of the Ancient World, and over considerable parts of China over the centuries. This may well have weakened the need for the extended family in that the family was no longer the ultimate guarantor of survival. This was probably particularly the case where the authority of the State impinged most strongly and for the longest periods: for instance, in the Ancient World, in Metropolitan Rome, and, especially, in the City of Rome. It is difficult to examine Augustus's marriage laws without concluding both that the extended family at least was under pressure and that a subsequently reversed fertility decline was under way. Rome, as Gibbon so eloquently related, never really died away in Europe: the Church inherited the marriage laws and the attitudes that framed them, as well as responsibility for those in critical circumstances; the manor guaranteed employment and set conditions on access to land, which not only implied that family nucleation (in the economic sense of responsibilities) was well advanced but also reinforced that nucleation (and possibly held fertility in check by preventing early marriage).[62]

Traditional societies with their greater overall organization either introduced or increased the use of money. This, together with their greater guarantees of security to the traveler, expanded trade. With their national legal systems, they were more likely to move toward freehold tenure of land, although the demographic transition theorist should note how recently communal tenure has been important in non-European parts of the world. In fact, in most of sub-Saharan Africa freehold land still exists on only a very limited scale. All these changes had implications for the family.

Wealth Flows in Primitive and Traditional Societies[63] As analyzed by an outsider from a modern society, children have demonstrable values of several different types in primitive and traditional societies. They do a great deal of work for or with their parents not only when young but usually during adulthood as well; they accept responsibility for the care of parents in old age; they eventually bolster the family's political power and hence give it economic advantages; they ensure the survival of the lineage or family name and in many societies undertake the necessary religious services for the ancestors.

This list, like much value of children research, obscures two very important points.

The first is that such disaggregation is a product of external observation or, even more significantly, of hindsight. In relatively unchanging societies no one sees these separate bonuses conferred by fertility. The society is made of a seamless cloth: children fit into an unintrospective society where they behave as their parents behaved and where their role is to work when young and to care for the old. This is why they may have great trouble in listing any good things (or bad things) about large families when asked by the researcher. Indeed, the respondents' ability to see clearly the separate aspects of children's value shows that the old system is already crumbling and that children's roles are not as certain as before. These roles, then, become important in what is now the transitional society and help to explain the options and decisions of such a society.

The second point is that the value of children to the lineage and ancestors is not really a prop with a strength of its own. Rather, this aspect of the role of children reflects the fact that the other aspects conducive to high fertility are positive as well. When the other props begin to deteriorate in the transitional society, so does the concern for ancestors (often with the help of imported religions, or new interpretations of existing religions, or the spread of secularism).

Nevertheless it is important for the analyst of a society moving toward transition (and this is true of most developing countries) to identify the nature and magnitude of the intergenerational wealth flows in the society. In pretransitional and essentially rural societies, at least six different economic advantages of children to one or both parents can be distinguished: (1) Situational gain is of particular importance to patriarchal males. The obsession with per capita analysis has obscured this type of gain. In Yoruba society there is nothing approaching an equal division of wealth or consumption within the family: there are inequalities by sex, age, and family status. As the number of children beyond infancy grows, and, indeed, as the number of wives and ultimately the number of children-in-law increases, it is inevitable that the person on top of the pyramid controls more resources and has access to more services (as well as enjoying more obvious power), even if per capita income remains

static. (2) Children work in the household and on the farm not only producing goods but providing a range of services that adults regard as wholly or partly children's work and that they are loath to do themselves: carrying fuel, water, messages, and goods; sweeping; looking after younger siblings; caring for the animals; weeding the crops; and so on. (3) Adult children usually assist their parents, especially with labor inputs into farms (which frequently increase as the parents age) and with gifts, to a much greater extent than the older generation readily admits or than is spontaneously reported to survey interviewers by either parents or children. (4) Adult children provide particular assistance in making up the family contributions to community festivities and to such family ceremonies as marriages, funerals, and celebrations connected with births. (5) The care of aged parents, who may insist on having their farms, businesses and households propped up as if they were still running them, can be a major undertaking. (6) Parents can invest in training or education of children so as to increase their ability to make returns (although the motive is usually only partly economic and is much more complex than is baldly stated here).

The key issue here, and, I will argue, the fundamental issue in demographic transition, is the *direction and magnitude of intergenerational wealth flows* or the net balance of the two flows—one from parents to children and the other from children to parents—over the period from when people become parents until they die. In premodern society much of the flow is indirect, because of the existence of extended families, clans, and even villages that share in these flows, and because the child's contribution to the parent may be largely by the augmentation of political strength to allow the tapping of a larger share of the communal wealth. The concept of a net balance is still valid, however, even if difficult to measure. It may even be closer to the truth in the older traditional village to speak of the flow being from the younger to the older in the community as a whole with the parent-child relationships in each family playing only a secondary role.

In all primitive societies and nearly all traditional societies the net flow is from child to parent. This is often partly obscured (especially in recent times) from the researcher by the very mechanisms that help to keep it working and to some degree determine the magnitude of the flow. Parents continually point out to children how much they have done for them and how much the children owe (not specifically as money or goods, but more as duty, which in the end means much the same thing). Such protestations may not have been needed in primitive society; to a large extent they help to provide guarantees in a changing and increasingly uncertain society. Three points should be noted. First, such protests are heard most in societies where the wealth flow is still from child to parent; they are much less a feature of a society where the flow has been

firmly established toward the child. Second, the protests are not likely to bear much relation to the size of the family and hence to the size or reality of the outlay. Third, the researcher is likely, on hearing the protests and recording them as responses in his questionnaire, to take them as evidence of the economic disadvantages or even irrationality of high fertility. The protests are likely to be supported by details of actual expenditure, without equal concern for details of the returns, and these the researcher may regard as quantified data. There is evidence from one study of a region adjacent to Nigeria that the work of single, adult sons is so important to fathers that they deliberately use their control of bride wealth and marriage ceremonies to space out and postpone sons' marriages so as to organize an even flow of the labor first of unmarried sons and eventually of grandchildren.[64]

There is then a great divide, a point where the compass hesitatingly swings around 180°, separating the earlier situation in which the net flow of wealth is toward parents and in which hence high fertility is rational and the later situation in which the flow is toward children and in which hence no fertility is rational. Why the divide is where it is, and why the compass swings, will be our major concern when investigating the transitional society.[65]

What this means is that before the divide economic rationality dictates unlimitedly high fertility. On the whole, discussion and even survey work in African primitive and traditional society seem to support this. Fertility is limited for all kinds of noneconomic reasons (some of which, however, like child survival, have economic implications). In Yoruba society, the Nigerian segment of the Changing African Family Project found that easily the most important reason is the spacing of births so as to contain infant and early childhood mortality and, hence, to maximize the number of living children. The second most important reason (at least in the past, because it has now been displaced in importance by delayed marriage) has been the cessation of sexual relations by a woman on the birth of the first grandchild so as to avoid the social and psychological tension arising from competing maternal and grandmaternal obligations. Other reasons have been the cessation of sexual relations in some cases when the husband takes another wife or when he moves elsewhere to work or because the woman feels increasingly old or battered by reproduction. Increasingly, fertility is being held in check by postponed age at marriage, which in the case of females already averages several years past puberty; this postponement arises out of competition with education or job opportunities and holds fertility in check because it is accompanied by continence, less sexual activity than in marriage, contraception, or abortion. When the numbers of children become really large, they raise problems of control, noise, and emotional deprivation even in rural societies. The list of noneconomic reasons is quite formidable and

is incontrovertible evidence that economic rationality alone is unlikely to determine fertility in any society.

Similarly, after the economic divide, economic rationality dictates zero fertility. This does not happen, and fertility often falls slowly and even irregularly, again for social and psychological reasons—the extent to which alternative roles are available to women, the degree to which child-centeredness renders children relatively expensive, the climate of opinion, and so on.[66] Fertility does not reach zero for reasons that are entirely psychological and social.

It is then necessary to attempt to measure intergenerational wealth flows, an endeavor that is rendered difficult in pretransitional society by a host of problems: much of the flow is not direct but is derived from the extra political power exerted by a man with many children, especially grown-up sons and daughters married into other families; much of the flow is not money but goods and services; some of the flow forms part of family contributions to meet community obligations and does not reach the parents at all; most people have good reason for diffidence about revealing the total flow of wealth, or at least that received. All of these difficulties except the last diminish as the economy becomes more monetized and society more urbanized, and hence transitional society allows easier measurement. Attempts to measure the near-lifetime return on investment in children as well as the outflow from older children were made in Ghana in 1963, and a more comprehensive attempt to examine intergenerational money flows was made in Nigeria's Western State in 1974–75. Both showed clearly that returns from children are substantial.[67]

It is essential to emphasize that the divide is not mechanistically determined by economic conditions. On the contrary it is almost entirely a social phenomenon (except that parent-child net flows of wealth, with the exception of labor and other services such as care for the very young and very old, are hardly possible in subsistence conditions or in the primitive society), and can be reached only when the economy of the nuclear family has been largely isolated from that of the extended family and when a subsequent change of balance has occurred within the nuclear family. The necessity for economic nucleation arises in several ways: the change of economic balance inside the nuclear family is essentially one of emotion and sentiment, which requires emotional nucleation (and other changes of emotional balance within the family) that is incompatible with the extended family economic system, which also needs a parallel system of emotional obligations to work; the change of economic balance in the nuclear family really means that the parents of the family are wholly in charge of their own family economy.

Even if the divide would probably eventually be reached in any urban-industrial society, attitudes and social organization could long delay its advent. Alternatively, a different set of circumstances could

bring it on early, even, in fact, before the creation of the modern economy. This seems to be what happened in Western Europe.[68] The feudal system, built on the inherited ruins of the urbanized civilizations of the ancient world, went far toward making a nuclear family economically viable. Doubtless, economic obligations existed to more distant relatives. But these obligations were supported by moral forces and were susceptible to the weakening or reversal of those forces. This seems to have happened with the rise of Protestantism, which put much store on self-sufficiency of all types and on moderation in expenditure and desires. It allowed a man to tell his relatives that they should be more careful in their expenditures, more frugal in their wants, and more foresighted in planning for times of need. More importantly, it allowed him to do this and cautiously refuse to give any (or much) assistance, while retaining his pride and even preaching his practice. Given that the divide had been reached, fertility could be increasingly controlled, even if, at first, mostly by postponed marriage.

In Africa, substantial support for the thesis that emotional nucleation precedes economic nucleation comes from a study in Ghana where Oppong showed among male undergraduates at two universities a significant correlation between the kind of family and kinship obligations the students believed in and the number of children they wanted and an earlier study by the writer that presented evidence on the extent to which urban elite families were emotionally turning in upon themselves.[69]

The Transitional Society An increasing proportion of the Third World population lives in transitional societies that are laboratories for the study of demographic change and lack of change and for determining the origins of demographic transition. "Transitional" here refers to rapid changes in the way of life, especially changes in the impact of children and in the possibilities available to parents for limiting the number of their children.

Nigeria's second largest city, Ibadan, is such a laboratory.[70] Its population is almost 750,000. Although agricultural links are still strong, only one-sixteenth of males report farming as their main occupation; one-third work in nonmanual occupations and another one-third work as soldiers, policemen, or craftsmen, or in similar jobs requiring a degree of training or imported skills and often with an orientation toward the nontraditional world. One-twelfth of women work in nonmanual occupations; but a similar proportion is employed in skilled occupations and over one-half in marketing, often of a somewhat different order from similar employment in rural areas. Three-quarters of the men and one-half the women have been to school; of the latter, one-quarter have experienced some secondary education and almost one-eighth have completed secondary school. More importantly, in terms of the strains on families frequently

depicted by demographers, nearly all their children are now receiving some formal education and the majority are proceeding on to secondary schooling. It is rapidly becoming easier to limit fertility if that is the aim. Sexual abstinence has long been widely known as an approved method of avoiding pregnancy. Modern contraceptives are now available from several clinics, a large number of pharmacies, and other retail outlets; in 1973 one-sixth of all women aged 15–59 years had used modern contraception and one-ninth were currently doing so, while the doubling time for the levels of each category of behavior (i.e. the time taken for the proportions behaving in this way to double) had for many years been only four years.

However, fertility (and "ideal family size") appear to have changed little. Significant differentials exist neither between Ibadan and Yoruba rural areas nor within Ibadan society (except that the small group of very highly educated women exhibit lower fertility at younger ages). Nor were contraceptors less fertile than noncontraceptors within Ibadan.[71] The conventional answer in terms of accepted demographic transition theory would be that attitudinal lags prevented parents from fully assessing the new economic situation, that innovation is not fully accepted and implemented at once because the props do not disintegrate at once, and that insufficiently motivated contraceptors are inefficient. None of these propositions appears to hold good in Ibadan, nor are they likely to elsewhere: the parents' assessment of the economic situation appears to be realistic with no time-lag involved; the innovators (as discussed in the section below) do not seem to be aware of their courage in disregarding the props; the contraceptors are mostly doing precisely what they meant to do with the contraceptives.

High fertility remains rational in nonagricultural urban conditions as long as the flow of wealth is predominantly from the younger to the older generation.[72] This is still overwhelmingly the case in Ibadan. The 1974–75 Survey of the Intra-Family Flow of Money and Assistance in Nigeria's Western State surprised us by showing that the return from investment in children is greater for urban than rural residents and is the greatest of all among the city white-collar and professional class. Yet the reason is not far to seek. The urban population working in the modernized economy have both the means and the understanding of the system to keep their children moving up the educational ladder to the top positions in the modern society—positions with high salaries and fringe benefits, as well as control of the levers of power and hence access to opportunities for more wealth, some, but not all, fraudulently obtained. The parents can provide a background suited to continued study, and they know the headmasters and the people who allocate jobs. Perhaps more unexpectedly, the younger generation do not resent the system because they

expect to receive wealth in turn from their own, even more successful, children. In fact, as Adepoju has shown, it is the more successful children who would feel most guilt about not sharing their wealth and who visit their parents most often to share it.[73] Furthermore, as the Nigerian Family Study's biographies of the successful clearly demonstrated, a major joy (perhaps the single most important consumption good for the successful) is meeting all family obligations in a more than generous way —in (as they repeatedly said) seeing distant relatives and even non-relatives recognize the donor's success and generosity.

This picture of the success of the urban middle class is but a segment of a wider picture of a whole modernizing society existing in a situation where wealth flows predominantly from the young to the old and where there are marked differentials in earning powers by rural-urban division and by education. The route from the rural area to the job in the modern sector of the economy is almost solely by extended education. Most parents can no longer manage to travel this way, but their children can. To get children far up the educational ladder and into the high-salary positions three stratagems are necessary: relatives outside the nuclear family must be encouraged to help with school fees or with accommodation and subsistence at centers where the right educational institutions exist; older children must help the younger ones in the same way (the sibling chain of educational assistance); and priority must be given to channeling the most assistance, at least early in the establishment of the sibling chain, to the children with the most chance of success—usually the brightest but occasionally those with unusual application, although the distinction is not often made. The first and second stratagems depend on the retention of the system of mutual obligations; the second and third work best with high fertility. The society, like many others in the Third World, believes that the birth of bright and potentially successful children is a matter of capricious fate to which some kind of probability can be assigned (the lucky dip, or lottery, principle) and that large families are likely to have one or more of such children whose existence far outweighs any disadvantages arising from a larger number of less successful siblings. Poor people have limited investment opportunities in such societies, and economic and political caprice can upset what appears to exist, so educational investment in children is thought to be the best investment in both Nigeria and Ghana, and doubtless in many similar societies. The child who has broken through to a job in the modern economy can assist the parents through flows of wealth (sent regularly and at times of crisis, brought on visits, or spent on visiting parents and siblings) or through influencing authorities and manipulating power; the child can bring honor to the parents by visiting them; and can give them access to the joys of the modern world during their visits or final retire-

ment to the child's house. Children in urban areas are usually needed to bring earnings into the household, in circumstances where the total income of a poor household is often the sum of many small parts.[74]

Contraception may in the future be used largely to limit family size, but for the time being there is a substantial and increasing demand for contraceptives in Ibadan for other, more pressing reasons: to substitute for female sexual abstinence after birth (in a world where the message of the enjoyment of sexual relations is increasingly being heard); to permit sexual relations during the increasingly long period before marriage in a situation in which pregnancy might destroy the investment in education or dictate a marriage regarded as less than desirable by the family; or to allow safe extramarital sexual relations in a society in which long periods of abstinence, substantial age gaps between spouses, and late marriage of males have meant that discreet relations of this kind have been to a large measure condoned.

More work needs to be done on individuals and families in dire poverty in both traditional and transitional societies. We have investigated a considerable number of cases in West Africa and one point seems clear: they are most likely to be products of an atypically inadequate family structure—often one that has been greatly eroded by mortality and that was vulnerably small in the first place because of accident or subfertility.

Identification of the Primary Forces of Change The transitional nature of Ibadan society also allows the identification of the extent, nature, and cause of fertility transition. This is best done by identifying the innovators. Two methods were employed in the Changing African Family Project. The first was the isolation of all those women in Ibadan (together with their husbands where the marriage was a first, monogamous one with the husband still present) who had indubitably succeeded in demographic innovation: women already over age 40 years with fewer than six live births achieved by intention and any method of restricting fertility.[75] The second was the examination of all women in the three 1973 Nigerian surveys who, regardless of age at the time, had had fewer than six live births, but desired no more and were at the time employing modern contraception to try to ensure this.

The first point established was that there are still very few demographic innovators. Ibadan contains about 62,500 women over age 40 years, but only 438 or 0.7 percent had intentionally and successfully restricted fertility to less than six births.[76] Women of all ages with fewer than six live births and using modern contraception to avoid further pregnancies numbered less than 2,000 in Ibadan, out of about 153,000 women aged 15–49 (or 1.3 percent) or about 128,000 aged 20–44 (about 1.5 percent).

The size of this demographically innovating group (i.e. under 2,000) can be compared with the number of so-called family planning innovators, for in 1973 the number of Ibadan women practicing modern contraception was over 17,000 or almost nine times as many. In the whole of the Western and Lagos States (which include rural areas but which also contain Lagos with its 2 million people and rapidly changing society as well as many other towns), only 0.5 percent of women are currently demographic innovators according to the first Nigerian survey. The 1.5 percent of demographic innovators in Ibadan can also be compared with the number of socioeconomic innovators: 46 percent of women have had schooling, and 15 percent have experienced at least some secondary education; most have their children of school age in full-time education; one-tenth are employed in the modern sector of the economy; one-third of the husbands work in nonmanual occupations, while no more than one-fourth could be said to be employed in the traditional sector of the economy. Clearly, continuing high fertility is not explained by lack of access to or even use of contraception, or by only limited modernization, or by children still maintaining the occupational roles they filled in traditional rural society.

The problem is, then, to study the demographic innovators in depth and to find out how and when they separated themselves from the rest of the community. The quest should be easy. One might infer from demographic transition theory that the decision to do without the props might well be traumatic, and some demographers have wished that they could talk to the eighteenth-century French couples who first daringly decided to innovate. In fact, at first the most frustrating and then the most illuminating discovery was that the demographic innovators are for the most part unaware that they have done anything unusual. After all, contracepting is no longer unusual, particularly in the educational and social groups to which most belong. The use of such contraception to limit family growth just seemed an obvious thing to do in their economic circumstances.

The fundamental question is then: What were the economic circumstances of this group and how did they differ from others who were supporting children at school? The first hint is given by some of their characteristics: demographic innovators compared with noninnovators are 1.6 times as likely to have been to school and 2.7 times as likely to have been to secondary school; they are 2.0 times as likely to have husbands in nonmanual occupations, 4.5 times as likely to be in such occupations themselves, and 2.5 times as likely to have had fathers in such occupations; they are 6.5 times as likely to have all these characteristics—to have fathers and husbands in nonmanual occupations and to be in such occupations themselves and to have had secondary education. Back-

ground and education are more important than current occupational experience or indeed any other contemporary circumstance or experience.

These findings could be said to be consonant with the knocking away of the props. However, the Nigerian segment of the Changing African Family Project contained a battery of questions and propositions of a psychosocial kind, relating to phrases taken from Yoruba proverb or song and of a type that could be made in a semi-philosophic way in everyday conversation. The responses showed clearly that what distinguished the demographic innovators from others was not their lack of superstition or their rationalism but their attitudes toward family and children. They have emotionally nucleated their families; they are less concerned with ancestors and extended family relatives than they are with their children, their children's future, and even the future of their children's children. They are more likely to have been "spoilt" themselves in the sense that their parents gave them more emotion and wealth than they expected back, and this is the way they tend, although usually to a greater extent, to treat their own children.[77]

What causes this emotional nucleation of the family whereby parents spend increasingly on their children, while demanding—and receiving—very little in return? Not the urban-industrial society, at least to the extent that it has developed in Ibadan. The majority of the society, even among the elite, is still one where net wealth flows over a lifetime from child to parent. Nor is that majority system buffeted by the institutional requirements of the modern economy; on the contrary it can adapt not only well but profitably to such a society. It might well be able to continue and improve the adaption for decades, or perhaps generations, except for the factor that has already brought about change among the small minority of demographic innovators.

That factor is undoubtedly the import of a different culture; it is Westernization. Just as Western ethnocentricity has bedeviled Third World research and introduced wholly inappropriate attitudes, assumptions and methods, it has in a perversely negative way upset the whole study of "modernization" (i.e. the social changes that seem to precede, accompany, or follow economic development). Western researchers have all too frequently decided to become "objective" or at least "non-self-centered" by achieving the almost incredible feat of omitting transmitted European cultural traditions from the study of modernization; it is like leaving Hellenization out of an examination of social change in fifth century BC Macedonia or leaving Roman social influences out of a treatise on Britain in the second century AD. This may sound like hyperbole, but it is not. In one of the major texts on social change in the Third World, Alex Inkeles and David Smith fleetingly recognized that the difference in their division of the world into that which was modernized and that

which was not was almost entirely a contrast between the West and the rest: "With the exception of Japan . . . all the major nations which we can consider modernized are part of the European tradition."[78] Rather than pursue this theme, they decided not to be "arrogant" and instead broke up the Western tradition into components that could be used for measuring not "Westernization" but "modernization."[79] Throughout William Goode's important study, *World Revolution and Family Patterns*, with its investigation of recent family changes in the Arab, Sub-Saharan African, Indian and Chinese worlds, "revolution," except in the discussion of slower growth over a longer period in the West, is a synonym for "Westernization."[80]

Curiously, it is only the well-trained, over-sensitive Western researcher who does not see and hear the obvious. In West Africa, survey respondents (as well as the conversationalist met in the street, the villager in the compound, and the Lagos newspaper) speak continually of adopting European ways—often, in fact, embarrassing the researcher in rural areas by going on to summarize this as "becoming civilized."

How, then, is the European concept of family relationships and obligations imported? The answer is that the import has been on such a massive scale that the slow erosion of traditional family structures is a measure of cultural durability.

Sailors, traders, and slavers may have disrupted some families, but they preached little and few took their examples as a model. However, in the mid-nineteenth century British colonial administration reached Lagos (less than 160 kilometers from Ibadan) and missionaries arrived at Ibadan itself. According to the Changing African Family Project, by 1973 nearly one-half the population of Ibadan were Christian and only 0.5 percent still described themselves as adhering to traditional African beliefs; two-thirds of those who had achieved small families were Christian. Missionaries and their successors have for over a century preached the Western family as the Christian family: monogamy as God's way instead of polygyny; husbands and wives looking after *their* children.[81] Administrators tended to take the same viewpoint, and nearly all Europeans in the developing colonial society advertised the Western family by example and viewpoint.

The mass infusion of European manners, however, has been relatively recent and it has had two interrelated vehicles: mass education and the mass media. Schooling for a very small minority, mostly male, dates back in Ibadan for over a century, but the movement toward some schooling for most children got under way in Yorubaland only in the 1950s. "The family," as taught by the school, is almost entirely the Western family. Textbooks either come from England or are local products modeled on English prototypes. Readers, used in the first years of schooling, are very

much concerned with the family and generally tell of a house with a father who goes out to work, a mother who stays home and looks after the children, and the children themselves, who are good and who can expect help and gifts to rain upon them from their two parents. School teachers, even when their own family lives are not fully Westernized, are unlikely to offer non-Western family precepts to their pupils.[82] Researchers have sometimes tried to relate fertility change to the Westernized context of the syllabus,[83] while activists have introduced a "population awareness'" ingredient into existing syllabuses; almost certainly such formal ingredients are trivial compared with the inbuilt assumptions of the system and its teachers. Education systems are not easily changed, and are much more likely to be imported intact. In much of the Third World they are essentially a reflection of the modern West, both in their origins and messages, and rarely mirror life in a largely communal and subsistence village. By the mid-1980s many of the women who flooded as youngsters in the late 1950s into the new primary schools may well be faced with the question of calling a halt to family size rather than continuing to reproduce. Then we will discover what impact their schooling had on their families' social and economic structure and what impact this has for their fertility.

Mass media in Nigeria have only had a marked impact since Independence in 1960. Only the newspapers and magazines require the literacy that comes from schooling, but education is likely to lead to the higher income that facilitates the purchase of a radio or a television set or a cinema ticket and to the interest in the nontraditional world that makes these purchases more probable. All cinema films, most television films that portray family life, much of the magazine content, and a considerable proportion of the newspaper feature content are imported, and the models on which they are based are wholly imported from the West. The same message of nuclear family structure is relayed as is imparted by the schools. But another message is also presented in Nigeria: the great importance of sexual relations. This is luridly presented in newspaper and magazine features, news stories, and question and answer sections. Taking a single important example, the emphasis on sex in the widely read *Lagos Weekend* must boost the market for contraceptives, because until recently the main interpretation has been on the excitement of relations outside marriage. But, with the increase in the proportion of educated (and partly Westernized) wives, it is inevitable that the message will be increasingly interpreted to mean also sexual relations within marriage. Such a change, certainly already well under way among the elite, cannot fail to affect the traditional system of family relationships (as has always been recognized in the society) and by strengthening the conjugal emotional bond will tend to nucleate the family, at first emotionally and ultimately economically.

Transition Theory Restated

In general, in societies of every type and stage of development, fertility behavior is rational, and fertility is high or low as a result of economic benefit to individuals, couples, or families in its being so. Whether high or low fertility is economically rational is determined by social conditions: primarily by the direction of the intergenerational wealth flow. This flow has been from younger to older generations in all traditional societies; and it is apparently impossible (or, at least, examples are unknown) for a reversal of flow—at the great divide—to occur before the family is largely nucleated both emotionally and economically. A fair degree of emotional nucleation is needed for economic nucleation; and considerable amounts of both are required before parents are free to indulge in ever greater expenditures on their children.

Pre-divide populations do not aim at females conceiving as frequently as possible during the full reproductive span, and post-divide populations do not favor childlessness. The reasons are not basically economic; they are social, psychological, and physiological. It is possible, however, that the marginal economic advantage of each additional child in pre-divide society and disadvantage in post-divide society in some circumstances modifies the impact of the noneconomic determinants. Nevertheless, economic analysis on its own can do nothing to predict the timing of the divide and very little to explain the levels of fertility on either side of it—probably the course of fertility in the twentieth century West owes less to the economics of each additional child born than it does to the extent to which parental emotional and expenditure patterns have become focused on the children and the degree to which their society renders such focusing expensive in terms of alternative uses for money, emotion, and time. Similarly, demographic evidence of fertility change may be valueless in terms of deducing movement toward the divide or estimating the probable timing of the reversal of the intergenerational wealth flow; the fertility change may well represent an adjustment of changing social, psychological, or physiological circumstances.[84]

Extreme external factors may influence this pattern. Pre-divide fertility may be restricted in the Kalahari Desert or on Tikopia because of very finite resources; and post-divide fertility was temporarily very high on the American frontier, where the wealth flow to children was relatively insignificant and where there were few alternative sources of labor and even company. The analysis carried out here has been largely based on Africa where access to land has been fairly unrestricted. The position may be somewhat more like Tikopia in densely settled agrarian areas in Asia. However, the little available evidence suggests that it is not, and that even there farming families do not on the whole see the extra birth as impoverishing and do not tighten their belts as the child

grows. The explanation may be partly that we are deceived by a static analysis and see the household or family too little in terms of the coming and going of people over time; partly that the extra child does in due course add sufficiently to production; and partly that in the contemporary world the existence of urban employment takes sufficient strain off the need for providing more land.

For reasons that lie deep in its history, the family was increasingly economically nucleated in Western Europe centuries ago; indeed some social groups may have crossed the divide reversing the intergenerational wealth flow as early as the seventeenth century.[85] This phenomenon had two demographic effects: a direct one, namely that Europe's population growth rate was lower than it would otherwise have been once mortality began to decline; an indirect one, in that European culture accepted the nuclear family as the basic unit of society and included a range of values associated with it among exports to other parts of the world.

An emphasis must be placed here on the export of the European social system as well as its economic system. It is as absurd to deny that this is the central feature of our times as to deny the significance of the Hellenization of southwest Asia, the Romanization of the Mediterranean and western Europe, and the Sinoization of much of southeast and central Asia in other periods. The issue is not whether Western social structure is better or even whether it is more suited to modernization; it is merely that the West has been able to export it because of the overwhelming economic strength it derived from the industrial revolution.

From the demographic viewpoint, the most important social exports have been the concept of the predominance of the nuclear family with its strong conjugal tie and the concept of concentrating concern and expenditure on one's children. The latter does not automatically follow from the former, although it is likely to follow continuing Westernization; but the latter must be preceded by the former. There probably is no close relationship in timing between economic modernization and fertility—and, if true, this may be the most important generalization of our time. If another culture had brought economic development, a culture with a much less nucleated family system, industrialization might well have proceeded far beyond its present level in the Third World without reversing the intergenerational flow of wealth. Conversely, in the present situation, family nucleation and the reversal of the intergenerational wealth flow are likely to penetrate deeply into the Third World in the next half century, almost independently of the success of industrialization, and, almost inevitably, they will guarantee slower global population growth.

Several subsidiary points about the export of the Western economic and social systems should be made. First, this export has made both mortality and fertility declines possible in the Third World. Public health measures were acceptable deep in traditional society, and this has been

taken as evidence of the reality of the props, which were so constructed as to encourage the desire for low mortality and high fertility. The props are in fact needless: in pre-divide society economic prosperity increased with the number of surviving children—the noneconomic restraints on fertility were more on the number of pregnancies and on the time-span of reproduction than on numbers of survivors. Second, the whole system of extended family obligations and the flow of wealth from younger to older generations may be disrupted by political means (China is the clearest example) with exactly the same effect in reducing fertility (although net wealth flows in a commune are probably relatively low, they are almost certainly from the old to the young). Third, the imminence of the reversal of the wealth flow and of declining fertility is usually hidden because of the increased economic benefits from high fertility in the modernizing economy of pre-divide transitional society. And fourth, the attempts to slow associations over time between mortality decline and various economic development indices on one hand and fertility decline on the other are probably valueless; even where there are direct relationships they usually cannot be proved because of the tendency for so many economic and social changes to move together.

A final note should perhaps be added on the more theoretical aspect of population growth in primitive societies. It can be argued that mortality is determined by environment, way of life, and technology, and varies widely among primitive and traditional societies. Yet, demonstrably, population growth rates over long periods have been very low, thus establishing that fertility levels must have approximated mortality levels. One can go further and maintain that this means that mortality levels determined fertility levels, an argument that not only supports the concepts of props but implies that they were subject to strengthening or relaxing until the right level was reached. A more plausible reading of the African tribal situation, however, is that fertility levels were established independently. Where they were above mortality levels, population grew, and the tribe expanded its area through warfare with its neighbors. When expansion was successfully opposed, mortality rates climbed to meet fertility rates: first, because of increasingly unsuccessful warfare and, subsequently, because of growing pressure on limited resources. Where fertility levels were below mortality levels, the tribe died out.

Research Implications

If the society is at every stage rational, and economically rational at that, then it can be studied employing economic tools, as long as it is understood that the researchers must accept the society's own ends. Those ends can be researched only by students of society, and their techniques alone

—and not those of economic inquiry—can attempt to predict the approach to the divide where the wealth flow reverses.

First-class fieldwork on wealth flows in pre-divide societies is urgently needed, and that research must start with the identification of all possible types of mobile wealth and the development of methods for detecting flows. A good study of a single village would be worth a great deal; defective work on a nation could be dangerously misleading. Cross-sectional studies have some value, but it will be necessary to build up life-cycle models. Specialized investigations might attempt to discover why children do not seem to press on resources in agrarian areas even when these areas are densely settled.

Sociological and anthropological work is needed to define the extent of the true extended families of obligation and to measure the internal wealth flows. It will also be necessary to measure the strength of each obligation bond—the circumstances (and the likelihood of those circumstances occurring) that will bring it into play and the probable volume of the wealth flow under given conditions. The study of the changing family and the measurement of movement toward the social, emotional, and economic nucleation of the conjugal family are important.

A combined social science assault will probably be needed on the circumstances and conditions of the reversal of the wealth flow—and on the time taken for the flow from the older to the younger generation to grow to such an extent that it exerts a real impact on fertility control decisions.

We also need studies that can easily be done in association with family planning action programs. We must find out the real reasons people want contraceptives and the extent to which contraception has anything to do with restricting fertility. Subtle and sympathetic studies in depth of both demographic innovators and contraceptive innovators are essential for action programs.

Finally, we need to know a lot more about the effect on the family of the lessons learned from the media and in school. Much effort has gone into distinguishing the population content of high school lessons but little study has been done on the family structure almost inadvertently taught in the elementary school.

The major implication of this analysis is that fertility decline in the Third World is not dependent on the spread of industrialization or even on the rate of economic development. It will of course be affected by such development in that modernization produces more money for schools, for newspapers, and so on; indeed, the whole question of family nucleation cannot arise in the nonmonetized economy. But fertility decline is more likely to precede industrialization and to help bring it about than to follow it.

Notes

1. See Harvey Leibenstein, "An interpretation of the economic theory of fertility: Promising path or blind alley?", *Journal of Economic Literature* 12 (1974): 457–479, for a survey of primarily economic theory that brings out the lack of concern of that theory with the onset of fertility decline.

2. Although many European countries remained in a state of transition for a long period, such conditions are not likely to recur, partly because of the existence of mass schooling. In contemporary transitional societies, families tend to be clearly in one fertility situation or the other, and hence fertility differentials appear; even whole societies are likely to move rather rapidly through the transition as the social and economic calculus changes.

3. Warren S. Thompson, "Population," *The American Journal of Sociology* 34, no. 6 (May 1929): 959–975; C. P. Blacker, "Stages in population growth," *The Eugenics Review* 39, no. 3 (October 1947): 88–101. In his 1946 publication, *Population and Peace in the Pacific* (Chicago: University of Chicago Press), Thompson largely supported the view put forward by Notestein in 1945.

4. Frank W. Notestein, "Population: The long view," in Theodore W. Schultz (ed.), *Food for the World* (Chicago: University of Chicago Press, 1945), p. 39. The term "demographic transition" is first employed on p. 41 of this article, after reference has been made to "demographic evolution" and "transitional growth."

5. Notestein, "Population: The long view," pp. 40–41.

6. Frank W. Notestein, "Economic problems of population change," *8th International Conference of Agricultural Economists, 1953* (London: Oxford University Press, 1953), pp. 15–18.

7. Some social scientists emphasized isolated parts of the argument: In "Population and family planning programs in newly developing countries" [in Ronald Freedman (ed.), *Population: The Vital Revolution* (Chicago: Aldine, 1965)], J. Mayone Stycos emphasized the possibility of advancement in life. W. F. Ogburn and M. F. Nimkoff [*Technology and the Changing Family* (Cambridge, Mass.: Houghton Mifflin, 1955)] stressed the great departure in the city from rural household economy. And Gösta Carlsson in "The decline of fertility: Innovation or adjustment process" (*Population Studies* 20 (November 1966), wrote of the new life style of the urban industrial society and the export of that style. Others, notably Philip M. Hauser and Otis Dudley Duncan, complained that too many explanations had been given, and that some of the supposed causes were material changes, while others were ones of ideas. [See "Demography as a body of knowledge," in Philip M. Hauser and Otis Dudley Duncan, *The Study of Population: An Inventory and Appraisal* (Chicago: University of Chicago Press, 1959), p. 94.]

8. Kingsley Davis, *Human Society* (New York: Macmillan, 1949), pp. 599–600 and "Institutional patterns favoring high fertility in underdeveloped areas," *Eugenics Quarterly* 2, no. 1 (March 1955): 37.

9. George J. Stolnitz, "The demographic transition: From high to low birth rates and death rates," in Freedman (ed.), *Population: The Vital Revolution* (Garden City, New York: Anchor Books, 1964), pp. 33–34.

10. Eva Mueller, "Economic motives for family limitation: A study conducted in Taiwan," *Population Studies* 27, no. 3 (November 1972): 383.

11. William Rich, *Smaller Families Through Social and Economic Development* (Washington, D.C.: Overseas Development Council, 1973), p. 2. Emphasis added.

12. Stephen Enke, "The economic aspects of slowing population growth,"

The Economic Journal 76, no. 1 (March 1966): 54.

13. Michael E. Endres, "Underdeveloped countries and the birth control alternative," in *On Defusing the Population Bomb* (Cambridge, Mass.: Halstead Press, 1975), p. 74.

14. Glenn Thomas Trewartha, *The Less Developed Realm: A Geography of Its Population* (New York: Wiley, 1972), pp. 182–183.

15. Notestein, "Population: The long view," pp. 39–41.

16. United Nations, *Concise Report on the World Population Situation in 1970–75* (New York: United Nations, 1974). Quotations from pp. 17, 2, and 14.

17. Eva Mueller, "The economic value of children in peasant agriculture," in Ronald G. Ridker (ed.), *Population and Development* (Baltimore: Johns Hopkins University Press, 1976).

18. Notestein, "Economic problems of population change," pp. 17–18.

19. Davis, "Institutional patterns favoring high fertility"; Davis and Judith Blake, "Social structure and fertility: An analytic framework," *Economic Development and Cultural Change* 4 (April 1956): 211–235. The relationship of fertility to kinship was stressed a year earlier by Lorimer, but he retained the religious and cultural props. See Frank Lorimer, *Culture and Human Fertility: A Study of the Relation of Cultural Conditions to Fertility in Non-Industrial and Transitional Societies* (Paris: UNESCO, 1954).

20. Thomas K. Burch and Murray Gendell, "Extended family structure and fertility: Some conceptual and methodological issues," in Stephen Polgar (ed.), *Culture and Population: A Collection of Current Studies* (Chapel Hill: Carolina Population Center, 1971), pp. 87–104.

21. William J. Goode, "Industrialization and family change," in Bert F. Hoselitz and Wilbert E. Moore (eds.), *Industrialization and Society* (Mouton: UNESCO, 1963), p. 240. It is possible to argue, at least in the Australian context, that they opted not for high fertility but for early female marriage in frontier conditions where women were scarce, but had an important role to play and that high fertility was the unplanned consequence [L. D. Ruzicka and J. C. Caldwell, *The End of Demographic Transition in Australia* (in preparation)].

22. Colin Clark, *Population Growth and Land Use* (London: Macmillan, 1967), pp. 186–187. It is true, however, that some preindustrial peoples appear to have a family structure nucleated not only in residence, but in closeness of relationships; but nevertheless they shared food and animal skins for clothing on a basis going beyond even distant relatives at the same camp. See Nelson H. Graburn, "Traditional economic institutions and the acculturation of the Canadian Eskimos," in George Dalton (ed.), *Studies in Economic Anthropology* (Washington, D.C.: American Anthropological Association, 1971), pp. 107–111. For the argument that the true extended family is largely a product of agrarian societies, see R. L. Blumberg and R. F. Winch, "Societal complexity and familial complexity: Evidence for the curvilinear hypothesis," *American Journal of Sociology* 77, no. 4 (January 1972): 898–920.

23. David M. Heer and Dean O. Smith, "Mortality level and desired family size," Contributed Papers: *Sydney Conference, International Union for the Scientific Study of Population, 21–25 August 1967* (Canberra: 1967), pp. 26–36.

24. Ansley J. Coale and Edgar M. Hoover, *Population Growth and Economic Development in Low-Income Countries: A Case Study of India's Prospects* (Princeton: Princeton University Press, 1958), pp. 11–12. Their summary is essentially based on Notestein, "Economic problems of population change."

25. See Deborah S. Freedman (with Eva Mueller), "Economic data for fertility analysis," *Occasional Paper* no. 11,

World Fertility Survey (August 1974): 7–8.

26. Richard Nelson, "A theory of the low-level equilibrium trap in underdeveloped economies," *American Economic Review* 46, no. 1 (1956): 894–906; Harvey Leibenstein, *Economic Backwardness and Economic Growth: Studies in the Theory of Economic Development* (New York: Wiley, 1957), pp. 170–173.

27. Julian L. Simon, *The Effects of Income on Fertility* (Chapel Hill: Carolina Population Center, 1974), pp. 163–164 and 130.

28. Ronald Freedman, "The sociology of human fertility: A trend report and bibliography," *Current Sociology* 10/11, no. 3 (1961–2): 40 and 48.

29. W. Parker Mauldin, "Fertility studies: Knowledge, attitude and practice," *Studies in Family Planning* 1, no. 7 (June 1965): 6.

30. Bernard Berelson, "KAP studies on fertility," in *Family Planning and Population Programs*, Berelson et al. (eds.) (Chicago: University of Chicago Press, 1966), p. 658.

31. This view is also at odds with Lorimer's attempt to produce a more sophisticated interpretation of fertility levels, a kind of "plural society" way of looking at the world, when he argued that there is not a simple contrast between the low fertility of developed countries and the high fertility of developing countries but that the latter exhibit a wide range of fertility levels reflecting their social and economic structures and presumably their norms. See Frank Lorimer, *Culture and Human Fertility: A Study of the Relation of Cultural Conditions to Fertility in Non-Industrial and Transitional Societies* (Westport, Conn.: Greenwood Press, Inc., 1954). Carr-Saunders had earlier argued that societies might be able to sustain different levels of fertility and that "the evidence . . . shows that the mechanism whereby numbers may be kept near to the desirable level is everywhere present" [A. M. Carr-Saunders, *The Population Problem: A Study in Human Evolution* (Oxford: Clarendon Press, 1922), p. 230].

32. Simon, *The Effects of Income on Fertility*, p. 105. He buttresses this by deciding that fertility behavior is rational, largely on the basis of the Princeton Office of Population Research demonstration that fertility is nearly everywhere substantially lower than it would be if presumably largely uncontrolled Hutterite fertility behavior were prevalent (see, e.g., p. 11).

33. See Emily L. Jones, "The courtesy bias in South-East Asian surveys," *International Science Journal* 15, no. 1 (1963): 70–76.

34. United Nations, Department of Economic and Social Affairs, *Population Bulletin of the United Nations, No. 7—1963, with Special Reference to Conditions and Trends of Fertility in the World* (New York: 1965), p. 143.

35. Among Western European countries, the first declines in fertility paralleled the beginning of marriage postponement perhaps as early as the seventeenth century [see J. Hajnal, "European marriage patterns in perspective," in D. V. Glass and D. E. C. Eversley (eds.), *Population in History: Essays in Historical Demography* (London: Arnold, 1965), pp. 101–143]; and even the restriction of fertility within marriage began a century ago. Therefore, at the threshold itself, many of the post-threshold societies identified in the study exhibited different index values (a range of socioeconomic and demographic indices was calculated) than their current ones—most, indeed, were then within the range of the contemporary pre-threshold societies. (This assumes that the UN studies mean the threshold to be between Groups 3 and 4. There is some tendency to alternate between the concept of a threshold and that of a continuum.)

36. Etienne van de Walle and John Knodel, "Demographic transition and fertility decline: The European case," *Contributed Papers: Sydney Conference, In-*

ternational Union for the Scientific Study of Population, 21–25 August 1967, pp. 47–55.

37. Dudley Kirk, "A new demographic transition?" in National Academy of Sciences, *Rapid Population Growth: Consequences and Policy Implications* (Baltimore: Johns Hopkins Press, 1971), pp. 123–147; Frank W. Oechsli and Dudley Kirk, "Modernization and the demographic transition in Latin America and the Caribbean," *Economic Development and Cultural Change* 23, no. 3 (April 1975): 391–419.

38. United Nations, *Concise Report on the World Population Situation.*

39. A. J. Coale, "The demographic transition reconsidered," *International Population Conference, Liege, 1973* Vol. I (Liege: IUSSP, 1973), pp. 62–63.

40. The only two national survey reports published at the time of writing were Rodolfo A. Bulatao, *The Value of Children: A Cross-National Study, II, Philippines* (Honolulu: East-West Population Institute, 1975), and Fred Arnold and James T. Fawcett, *The Value of Children: A Cross-National Study, III, Hawaii* (Honolulu: East-West Population Institute, 1975). The emphasis on a psychological approach is set out in Fred Arnold et al., *The Value of Children: A Cross-National Study, I, Introduction and Comparative Analysis* (Honolulu: East-West Population Institute, 1975), pp. 5–6. The report on the original workshop is also available but it is more economically oriented than the subsequent project [James T. Fawcett (ed.), *The Satisfactions and Costs of Children: Theories, Concepts, Methods* (Honolulu: East-West Center, 1972)]. There have been separate Value of Children projects, such as the survey carried out as part of the 1973 Nigerian segment of the Changing African Family Project to be described later in this paper.

41. The origins of economic anthropology lie, appropriately for the demographic transition theorist, in premodern European history and economic history, but its genesis as a separate field is to be found in German ethnographic studies of the second half of the nineteenth and the first quarter of the twentieth centuries and French studies of the 1920s. In English a literature also began to develop from the 1920s with the work of Malinowski and Firth, leading to the attempt by Herskovits at the end of the 1930s to compile and synthesize what was known. Controversy and new studies have found a renewed vitality in recent years. For a good review of the field, see Raymond Firth (ed.), *Themes in Economic Anthropology* (London: Tavistock, 1967), with references to the syntheses of Wilhelm Koppers in 1915–16 and Max Schmidt in 1920–21 and the later work by Richard Thurnwald. And on more recent studies, see also, for instance, George Dalton, *Studies in Economic Anthropology* (Washington, D.C.: American Anthropological Association, 1971); Marshall Sahlins, *Stone Age Economics* (Chicago: Aldine-Atherton, 1972); and Scarlett Epstein, "The data of economics in anthropological analysis," in A. L. Epstein (ed.), *The Craft of Social Anthropology* (London: Tavistock, 1967).

42. For example, in the Nigerian Segment of the Changing African Family Project, respondents were asked, "If someone offered you a good job for three years, but you could only take it if you put off having a baby for that time, would you be prepared to try to stop having a baby for three years?" Only one-quarter of both women and men replied "No" and that response was not much higher even in remote villages. Very few Nigerians would be offered a good job (defined by most as meaning one in the modern, white-collar sector) and fewer still with a guaranteed period of employment. In practically no case would a woman have to agree not to have a child (and never in the case of men). Should such an extraordinary offer ever be made, of course many might opt for the good job. The fundamental fact about developing economies is that choices of this kind do not exist and,

therefore, a question of this kind is not appropriate.

43. Chukuka Okonjo, "A preliminary medium estimate of the 1962 mid-year population of Nigeria," in John C. Caldwell and Chukuka Okonjo (eds.), *The Population of Tropical Africa* (London: Longman, 1968), pp. 78–96.

44. The argument will not repeat that of the various research papers from that work but will draw on them: primarily, John C. Caldwell, "Fertility and the household economy in Nigeria," *Journal of Comparative Family Studies,* Special Issue, 1976, and "The economic rationality of high fertility," with supporting data from J. C. Caldwell and Pat Caldwell, "The role of marital sexual abstinence in determining fertility: A study of the Yoruba in Nigeria," *Population Studies* 30, no. 2 (July 1977, forthcoming) and "Demographic and contraceptive innovators: A study of transitional African society," *Journal of Biosocial Science* 8, no. 4 (October 1976); "The achieved small family: Early fertility transition in an African city" (in press); J. C. Caldwell and H. Ware, "The evolution of family planning in an African city: Ibadan, Nigeria," *Population Studies* 31, no. 3 (November 1977) (forthcoming); F. O. Okediji et al., "The Changing African Family Project: A report with special reference to the Nigerian segment"; Oshomha Imoagene, *Social Mobility in Emergent Society: A Study of the New Elite in Western Nigeria,* Changing African Family Monograph, No. 2, Department of Demography, Australian National University and Department of Sociology, University of Ibadan, Canberra, 1976.

45. Edward E. Evans-Pritchard, *The Nuer: A Description of Livelihood and Political Institutions of a Nilotic People* (Oxford: Clarendon, 1940), p. 90.

46. C. K. Meek, *Land Law and Custom in the Colonies* (Oxford: Oxford University Press, 1949), p. 16.

47. Sahlins, *Stone Age Economics,* pp. 185–186; see also Mauss (esp. pp. 37–41).

48. See Larissa Lomnitz, "Reciprocity of favors in the urban middle class of Chile," in Dalton, *Studies in Economic Anthropology,* for a description of the extensive system of reciprocity still existing among the Chilean middle class.

49. C. Edward Hopen, *The Pastoral Fulbe Family in Gwandu* (Oxford: International African Institute, Oxford University Press, 1958), pp. 113–114. For examples from other cultures, see, for instance, Clifton R. Wharton, Jr., "Risk, uncertainty and the subsistence farmer: Technological innovation and resistance to change in the context of survival," and Allen W. Johnson, "Security and risk-taking among poor peasants: A Brazilian case," both in Dalton, *Studies in Economic Anthropology.*

50. Peter C. Garlick, *African Traders and Economic Development in Ghana* (Oxford: Clarendon Press, 1971), pp. 110–118.

51. Although this conclusion seems obvious, misinterpretations on this issue abound. Thus, one economist/demographer, Julian Simon, arrived at the right conclusion by making the unfounded assumption that in high-risk situations one cannot afford to worry about the future and, hence, is irresponsibly fertile. George Peter Murdock's analysis of family types from the Yale cross-cultural survey file in *Social Structure* (New York: Macmillan, 1949) confused the whole position by placing emphasis on such simple characteristics as residence units and groupings during movement, so that his successors began to draw parallels between independent, nucleated families found on the one hand among food gatherers and herders and on the other in industrial societies, and to contrast these with the extended family of settled agriculturists. (See, for example, M. F. Nimkoff and Russell Middleton, "Types of family and types of economy," *The American Journal of Sociology* 66, no. 3 (November 1960): 215–225.) Nothing, as we will see, could be less illuminating. The inward-turning nuclear family where obligations exist

largely between spouses and toward their nonadult children is a very recent phenomenon almost everywhere except in the West. In spite of Murdock's followers' attempts to show resemblances between Eskimo and Western families, the former in fact have traditionally shared all the food they caught, and it is hardly possible that a nuclear family could improve its diet at the expense of others (see Graburn, cited in note 22 above).

52. Max Gluckman, *Custom and Conflict in Africa* (Oxford: Basil Blackwell, 1955). See also, on the breaking of the emotional bond between a mother and her first-born in Hausa-Fulani society of northern Nigeria, Jean Trevor, "Family change in Sokoto: A traditional Moslem Fulani/Hausa city," in John C. Caldwell (ed.), *Population Growth and Socioeconomic Change in West Africa* (New York: Columbia University Press, 1975).

53. Data from CAFN 2 (Changing African Family Project: Nigerian Segment, Survey 2). On the traditional upbringing of children by a number of kinsmen, see L. P. Mair, "African marriage and social change," in Arthur Phillips (ed.), *Survey of African Marriage and Family Life*, Part 1 (London: Oxford University Press, 1953), p. 2; and, for survey figures showing fewer than half of children in the Ivory Coast to be with their biological parents, see Remi Clignet, *Many Wives Many Powers: Authority and Power in Polygynous Families* (Evanston: Northwestern University Press, 1970), p. 171.

54. The new elite are more likely to have come from larger rural families than from smaller rural families even when allowance is made for the anticipated differential between the two in the number of children supplied to the succeeding generation (see Imoagene).

55. Evans-Pritchard, *The Nuer*, p. 91.

56. Marshall Sahlins, "The intensity of domestic production in primitive societies: Social inflections of the Chayanov Slope," in Dalton, *Studies in Economic Anthropology*, pp. 30–51. S. P. Reyna, "Pronatalism and child labor: Chadian attitudes to birth control and family size," in *Population Growth and Socioeconomic Change in West Africa*, argues that, even in primitive society, the unit with greater working capacity is able to diversify its activities, thus making use of windfall gains and distant economic opportunities and raising its per capita income.

57. Frank Lorimer, "The economics of family formation under difficult conditions," in *Proceedings of the World Population Conference, Belgrade, 30 August-10 September 1965* (New York: United Nations, 1967), II, pp. 92–95.

58. Hopen, p. 124, fn. 1.

59. Pierre de Schlippe, *Shifting Cultivation in Africa: The Zande System of Agriculture* (London: Routledge and Kegan Paul, 1956), p. 235.

60. Boserup, *Woman's Role in Economic Development* (London: Allen and Unwin, 1970), pp. 27–52.

61. An analysis of the startlingly rapid change that occurred in another southern Nigerian society (the Ibos) with the imposition of colonial government found massive development in trading and other economic adaptations, but nothing worth reporting on the family and reproduction. See Simon Ottenberg, "Ibo receptivity to change," in William R. Bascom and Melville J. Herskovits (eds.), *Continuity and Change in African Cultures* (Chicago: University of Chicago Press, 1959), pp. 130–143.

62. Josiah C. Russell, "Demographic values in the Middle Ages," in George F. Mair (ed.), *Studies in Population: Proceedings of the Annual Meeting of the Population Association of America at Princeton, New Jersey, May 1949* (Princeton: Princeton University Press, 1949), pp. 103–107.

63. Strictly speaking, economists describe these "wealth flows" as "income flows," retaining the word "wealth" for a stock rather than a flow. However, most social scientists assume that "income" ex-

cludes the giving of a helping hand in the house and many other items included in this discussion. Hence, it seemed necessary to use a new term.

64. Stephen P. Reyna, "Making do when the rains stop: Adjustments of domestic structure to climate variations among the Barma," *Ethnology* 14, no. 4 (October 1975): 405–417.

65. This will be discussed by the author at greater length in a book on *The Conditions of Fertility Decline* (in preparation) and in a set of studies which he is editing, *The Persistence of High Fertility: Population Prospects in the Third World, Changing African Family Project Monograph no. 3* (Canberra: Department of Demography, Australian National University, 1977).

66. This pattern is being examined toward the end of fertility transition in Australia in a book by L. D. Ruzicka and John C. Caldwell, *The End of Demographic Transition in Australia* (in preparation). Reported child-centeredness in this population is noted in John C. Caldwell, "Family size norms," in Helen Ware (ed.), *Fertility and Family Formation: Australasian Bibliography and Essays, 1972,* Australian Family Formation Project Monograph No. 1 (Canberra: Department of Demography, Australian National University, 1973), pp. A3–A13.

67. See John C. Caldwell, "The erosion of the family," "Extended family obligations and education," and "Fertility and the household economy in Nigeria," especially the section entitled, "An investigation into the inputs into children and the returns from adult children and from education."

68. It is doubtful if this happened in the traditional stage of any other society, although in Japan families did exhibit "rapid segmentation in each generation," partly because of a kind of primogeniture system, and because fertility levels were probably moderate. [See Ezra F. Vogel, "Kinship structure, migration to the city, and modernization," in R. P. Dore (ed.), *Aspects of Social Change in Modern Japan* (Princeton: Princeton University Press, 1967), pp. 91–92; and Irene B. Taueber, *The Population of Japan* (Princeton: Princeton University Press, 1958), pp. 52–53.] Extended family help was the rule in India and China [Olga Lang, *Chinese Family and Society* (New Haven: Yale University Press, 1946), p. 169], while in northern Nigeria it could be institutionalized into the *gandu* [Polly Hill, *Rural Hausa: A Village and a setting* (New York: Cambridge University Press, 1972)].

69. Christine Oppong, "Attitudes to family type and family size in West Africa: A study of norms among a Ghanaian student population," *International Journal of the Sociology of the Family* 4, no. 2 (1974); Caldwell, *Population Growth and Family Change in Africa.*

70. Data from the Changing African Family Project, mostly from the first survey in the Nigerian segment.

71. John C. Caldwell and Helen Ware, "The evolution of family planning in an African city: Ibadan, Nigeria." Comparisons were made by age at given parities and changes in parity, and age-specific birth rates were also estimated.

72. This is a different argument from that put forward in Davis, "Institutional patterns favoring high fertility," p. 4, where it is argued that the growth of cities at first reinforces high fertility in rural areas by providing greater outlets for agricultural produce.

73. Aderanti Adepoju, "Migration and socioeconomic links between urban migrants and their home communities in Nigeria," *Africa* 44, no. 4 (October 1974): 385–387.

74. On the economic impact of rural-urban migrant children in Ghana, see John C. Caldwell, *African Rural-Urban Migration: The Movement to Ghana's Towns* (New York: Columbia University Press, 1969); for a discussion of the role of children in the family economy in India, see Mahmood Mamdani, *The Myth of Population Control. Family, Caste, and Class in an Indian Village* (New York: Monthly Review Press, 1972); for a description of

the situation in a cloth-weaving town in south India, see V. P. Pethe, "Attitudes toward family planning: Case studies," in *Demographic Profiles of an Urban Population* (Bombay: Popular Prakashan, 1964), p. 112.

75. CAFN 3, Changing African Family Project: Nigerian Segment, Survey 3. The latitude allowed with regard to contraception, namely the use of any method, including abstinence, to achieve the small family was necessary because the survey was restricted to older women who had relatively little access to modern contraception.

76. This is a very conservative definition of fertility innovation; however, even some of these women might have achieved this fertility by chance and then have rationalized the position [see R. Lesthaege and H. J. Page, "Relating individual fertility to other variables: Common problems and pitfalls," *Seminar on Marriage, Parenthood, and Fertility in West Africa, Lomé, January 3–9, 1976.* International Sociological Association].

77. There has been previous evidence pointing this way from studies in Ghana. The author, drawing on a 1962–64 research program, emphasized that the family-building practices and attitudes of the new urban elite could be understood only in terms of relationships restructured in terms of a fusion of an existing culture with an imported one (*Population Growth and Family Change in Africa*, especially pp. 52–73 and 183–188). Oppong has shown how presumably rational decisions about desired family size among younger members of this elite reflect the type of family situation they desire and will probably try to construct (see "Attitudes to family type and family size in West Africa," a study of university students).

78. Alex Inkeles and David H. Smith, *Becoming Modern: Individual Change in Six Developing Countries* (London: Heinemann, 1974), pp. 17–18.

79. Their index lists "European influence" only to suggest "See Western bias," and, on following this into the text, we find them preparing a defense because "some of our critics would be prepared to argue that the use of the O. M. [Overall Modernity] scale borders on being a social science form of cultural colonialism" (p. 297). Their scale is of little use for the demographer trying to relate modernization to family and fertility change, for two of its important components are "kinship obligations" and "family size" (both measured negatively) (pp. 25–27 and 34).

80. William J. Goode, *World Revolution and Family Patterns* (Glencoe: Free Press, 1963).

81. There has been some revolt against the identification of Christianity with the West, and the African pentecostal churches, which do not preach Western values, have attracted about one-quarter of Ibadan's Christians (CAFN 1).

82. A comprehensive study of teachers, their family lives and problems, their attitudes, and their fertility will be available when Christine Oppong analyzes the Ghanaian Segment of the Changing African Family Project.

83. Norman H. Loewenthal and Abraham S. David, *Social and Economic Correlates of Family Fertility: An Updated Survey of the Evidence* (North Carolina: Research Triangle Institute, 1972), p. 42.

84. See, for example, past fertility declines reported in William Brass et al., *The Demography of Tropical Africa* (Princeton: Princeton University Press, 1968), pp. 178, 181, 346–347, 512–513.

85. Louis Henry, *Anciennes Familles Genevoises: Etude Démographique XVI–XX Siècle*, INED, Travaux et Documents, Cahier no. 26 (Paris: Presses Universitaires de France, 1956); Sigismund Peller, "Births and deaths among Europe's ruling families since 1500," in D. V. Glass and D. E. C. Eversley (eds.), *Population in History: Essays in Historical Demography.*