

No. 59
June 1980

Center
for
Policy
Studies

Working Papers

INSTITUTIONAL DETERMINANTS OF FERTILITY CHANGE

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Abstract

Explanations for fertility change in terms of shifts in institutional settings, often highly plausible, are in most cases anecdotal, after-the-fact accounts. To give status as theory to institutional determination requires tracing out conceptually and empirically how such settings impinge on behavior. It is argued that this impact may come not only from changes in perceived costs of particular behaviors, amenable to analysis using conventional consumer choice assumptions, but also (and perhaps more consequentially) from changes in the way people shape their perceived environment into "domains of consistency"--areas of decision making within which behavior is adaptive but between which tradeoffs among alternatives are for one reason or another not routinely made. (The concept draws on H. A. Simon's treatment of administrative behavior.) Elaboration of a predictive theory of institutional determinants would entail delineating domains of consistency relevant to decisions bearing on fertility and identification of the factors in the institutional and cultural environment that define them. In addition, to avoid predictive statements being wholly obscured by contingencies, the forces governing institutional change, both those located in the larger polity and those deriving from the shifting nature of transactions among individuals in the society, come properly into the province of such a theory.

POPULATION COUNCIL LIBRARY CATALOGUING-IN-PUBLICATION DATA

McNicol, Geoffrey

Institutional determinants of fertility change/
Geoffrey McNicol. -- New York : The Population Council,
June 1980.

p. -- (The Population Council. Center for Policy
Studies. Working paper, 59)

"Revised version of paper presented at the Seminar on
Determinants for Fertility Trends...Bad Homburg, Germany,
14-17 April 1980."

1. Fertility, human - Economic aspects. 2. Fertility,
human - Social aspects. I. Title. II. Series.

HB882.P66 no.59 [HB903.F4]

6.80.hnz

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This is a revised version of a paper presented at the Seminar on Determinants of Fertility Trends: Major Theories and New Directions for Research, Bad Homburg, Germany, 14-17 April 1980. The seminar was co-sponsored by the IUSSP Committee on Comparative Analysis of Fertility and the German Demographic Society.

Everyone knows why fertility falls in the course of economic development. The reasons were set out with clarity and persuasiveness by the earliest writers on demographic transition--Thompson, Lorimer, Notestein, and Davis--and little has had to be added to or subtracted from their arguments in the last several decades to maintain their force. Yet despite this knowledge it is widely agreed that we do not have an adequate theory of fertility, if by theory we mean a coherent body of analysis linking a characterization of society and economy, aggregate or local, to individual fertility decisions and outcomes, able to withstand scrutiny against the empirical record (the latter test presumably assuring some predictive value).¹ It is an anomalous situation, the more so in that quite important allocative decisions may be influenced by considerations of "population policy," considerations in turn based on statistical linkages between fertility and other variables whose theoretical interpretation is by no means clear.

How do we explain the evident difficulty in moving from satisfactory anecdotal explanation of fertility change to social science theory? Some would ascribe it to the intricate nature of the subject. Fertility, after all, is both social behavior that attaches at innumerable points to its socioeconomic and sociocultural setting and biological behavior with dim evolutionary antecedents and immediate physiological constraints. The enormous complexity of its determinants, then, might effectively preclude fertility theory from being anything but anecdotal--limiting it to plausible post facto explanation. Like the stock market, say, or, to choose a closer example, the weather, where everything can be explained but very little predicted.

But there is an alternative and less dismal explanation for weakness of theory. It is that we have somehow not yet discovered or devised appropriate parameters of the fertility decision making environment--parameters that would reduce unmanageable complexity to a semblance of order. That a reduction of this kind is conceivable is of course a matter of faith. Such faith, however seldom rewarded, is what marks the social scientist's lot from the less demanding (in the sense of being less stringently accountable) task of historian, traditionally free to wallow in a luxuriance of detail combined with agnosticism as to cause and effect, or, in his modern guise, to invent counterfactuals ad libitum safely protected against refutation.² The theory building task, then, is how to "harden" casual theorizing into theory.

Reduction, on the other hand, can go too far, leaving an explanatory framework with too few dimensions to span the phenomenon of interest. In the fertility case, I would argue, this is what happened with some attempts to fit fertility into the "new" theory of consumer demand--in which households combine market goods and services (including services of children) with the human capital and time of members, somewhat as in a conventional production function, to yield the final "commodities" people are presumed really to desire. In relatively stable settings in advanced economies, this conceptualization might indeed capture an appreciable part of fertility variance, but even here, and especially in societies still undergoing fertility transition (or yet to begin), additional degrees of freedom have to be added. The phenomenon, as it were, bursts the bounds of the model and compels a larger accommodation. One route taken to provide this accommodation has been to span these new dimensions with the utility function--giving that function a bizarre collection of arguments reflecting all the kinds of values that might influ-

ence decisions--while retaining the rest of the household model intact. Preferences are defined over such "fundamental aspects of human behavior" as health, prestige, sensual pleasure, benevolence, and envy.³ The attempt is valiant, but not persuasive. Expanding the utility function moves the fertility theory further away from possibility of empirical validation, except in a limited Friedmanite sense, as it fits it closer to supposed empirical realities--not a fruitful trade-off; moreover, there is the temptation to go on adding arguments to the function whenever needed.

In this paper I explore an alternative way of introducing the needed degree of complexity into a theory of fertility, drawing essentially on the notions of bounded rationality developed by H. A. Simon. The complexity, in this approach, instead of being bottled up within a utility function, is allowed to dictate the structure of decision making (as opposed to the empirically inaccessible structure of tastes). The choice I investigate is to keep to a simpler preference calculus--our prime concern, as Leibenstein has helpfully emphasized, is with the marginal child, not with the complexities and ambivalences that go into valuing children as a category--but to constrain the alternatives considered. These constraints enter not (or not alone) as direct costs of search for information nor, at least in the conventional elusive meaning of the term, as psychic costs, but as an outcome of the structuring of the decision environment facing individuals set up by surrounding institutional forms and cultural patterns. The immediate institutional setting within which fertility decisions are made hence comes directly into play. Changes in this setting can be seen to elicit corresponding changes in individual behavior--but working through a loose articulation that itself becomes a major object of study. In turn the forces governing insti-

tutional change, both those located in the larger polity and those deriving from the shifting nature of transactions among individuals in the society, come properly into the province of fertility theory.

Structural Explanations of Fertility

It is for the most part a simple matter to show how a given pattern of fertility "makes sense" in a particular social and economic setting. Knowing the answer--that is, the fertility outcome--the problem is essentially to infer a set of weights that, applied to different institutional forms in the society, can recreate an incentive structure consistent with that outcome. The incentive structure comprises the arrays of pressures directly or tangentially bearing on fertility, including effects on options for others to intervene to influence fertility. Such pressures may be simple economic incentives (working, say, through economic returns to children), legal-administrative sanctions (marriage laws, local government dictates), or social pressures to conformity.

There are complications, of course. Firstly, the pure biology of the situation must be disposed of, to ensure that one is not caught explaining in economic or social terms more than in fact remains to be explained in these terms--an embarrassment by no means unknown to analysts in this area. Fortunately, most of the biology turns out to be less than pure, and knowledge of "proximate determinants" of fertility more often serves to facilitate a socioeconomic explanation than to preempt one. Second, there may be several alternative weightings each of which is consistent (within the limited precision that characterizes this mode of analysis) with the observed fertility patterns. Usual analytical practice would halt investigation as soon as one

satisfactory explanation is arrived at, so this case is perhaps less often met with than it should be. However, where several investigators work independently to explicate the same situation, competing and mutually incompatible findings on fertility determinants are common enough. Third, in the now typical case of societies undergoing rapid change, incentive structures lose their neatness: behavior plausibly may lag behind what would seem to accord with current realities, or may relate to an anticipated future setting not yet in place. These lags and expectations introduce a further element of looseness and potential arbitrariness into the analysis. And fourth, there is the possibility of behavior responding to changes in cultural prescriptions beyond the reach or even purview of an economic- cum institution-based analysis.

Despite these difficulties, careful analysis of institutional settings, covering both statics and dynamics, can produce quite convincing explanations of fertility levels and trends. By way of illustration, I will briefly look at three instances of this kind of explanation, each perforce treated here with a high disregard for detail but in each case where the outlines could be defended at greater length. One is from a recent interview-based reconstruction of social change in Guangdong province, China; the second is a more speculative view of fertility transition in Bali, Indonesia; the third draws on a study of Bangladesh by Arthur and myself.

Guangdong (Kwangtung). This province in south China has a population of over 50 million, 40 million in its rural sector. Evidence of demographic conditions in the early decades of the century, based on a large 1929-31 survey of farm households in south China as a whole, indicates very high

mortality (a death rate above 40 per 1000) and near zero natural increase.⁴ Total fertility of around 5.5 was maintained by early and virtually universal marriage, combined with fairly moderate marital fertility. Something close to this fertility level probably also prevailed in the 1950s and 1960s, years during which death rates fell rapidly. In the last 10-15 years, birth rates have also registered dramatic declines. A recent official source put Guangdong's natural increase in 1965 at 2.9 percent and in 1975, 1.3 percent.⁵ Birth rates may well have been nearly halved in that decade, down to a level in the low 20s.

A skillful and innovative recent study of social organization and change in Guangdong (Parish and Whyte, 1978) throws light on how this fertility drop came about.⁶ Parish and Whyte show persuasively that the nature and extent of rural change "does not correspond in any clear and simple way with government priorities and pressures," but instead reflects peasant responses to the new "solidarities, obligations and interests" built into the social structure in the transformations of the 1950s.

The basic reality of China's rural scene is that, notwithstanding the upheavals of collectivization, the abortive communization effort, the Great Leap, and the Cultural Revolution, the economy has as its organizational base three groupings that have existed all along: the family, the local (subvillage) neighborhood (often also linked by kinship ties), and the natural village. Production teams, the basic labor-management and income-sharing units, typically coincide with village neighborhoods or single small villages; production brigades mostly coincide with natural village boundaries. (In Guangdong, teams average 20-40 households--150-200 persons; brigades, 100-350 households--or around 7 teams.) Other organizational forms in the society

cutting across these territorial groups include principally an association for poor and middle peasants, a women's federation, a youth league, and a militia, only the last mentioned being particularly active. Notably missing in the rural social structure are the landlords and powerful lineages, killed or dispossessed in the early years of the revolution.

The essence of the 1950s' transformation, Parish and Whyte conclude, is that "the new structures have succeeded in shifting importance away from lineages and affinal kin ties and toward team and brigade boundaries, whether they correspond with ties of kinship or not" (p. 321). The reinforced territorial solidarities that were set up not only served the national economic interest in a rationalized agricultural sector receptive to technological change, but also could and did resist other government efforts to change--the most dramatic instance being the failure of the radical 1958-60 communization program, attributed to local level opposition.

The sources of this newfound local resilience are easily identified. Land reform gave all village households a tangible stake in the team and brigade economy. The government committed itself to a constant level of agricultural taxes, so that this levy became a steadily smaller burden on brigades and teams as productivity increased. On the other hand, these units were assigned significant obligations to fund their own social services: transfer payments, for example, are largely confined within brigades. Wealthier teams are able to prevent poorer workers from moving in and can resist efforts to make them merge into larger income-sharing groups. Policy measures aimed at restraining rural-urban migration serve also to bind workers to their villages. The strong political and administrative structure established by Party and government reaches deep into the countryside, but ultimately comes

up against the conflicting loyalties of brigade and team leaders--who are locals and who need the day-to-day support and cooperation of their neighbors.

For all the efforts to promote higher levels of collectivization, families remain an important economic unit. The intricate scheme of allotting work-points within teams--characterized by The Economist as "village Keynesianism" with work-points serving as a local currency--rewards families with low dependency rates.⁷ Children admittedly can contribute work-points to the family well before their formal entry into the labor force, but the closeness and smallness of the population within which demographic costs must be contained rule out most of the diversification or gambling strategies thought to make children economically profitable (ex ante, at least) in less tightly organized peasant societies and at the same time permit social pressures on families for demographic conformity to build up.

Fertility decline, though interpreted here as primarily a response by parents and communities to the changed rural social structure and consequent shift in economic incentives, must also have been facilitated by expansion of the health care system and encouraged by government antinatalist and delayed-marriage campaigns. With reference to such campaigns, however, Parish and Whyte argue that for marriage at least (and, one would guess, a fortiori for births) official efforts were relatively ineffective. Female average age at first marriage remained almost constant from the 1950s to the early 1970s (their most recent data), at 20-21 years, despite strong--albeit fluctuating--administrative pressure for late marriage (age 23 or over): "We don't claim that the government's proclaimed marriage ideals, with which most Kwangtung peasants are quite familiar, have little impact. We do argue that their implementation depends to a very great extent on the concrete features of

village life, features which support some changes and obstruct others" (p. 199).

Bali. This Indonesian island and province, about 5,600 sq. km. in area and with a population in 1980 of less than 3 million, is a popular success story in family planning annals. (The neighboring island of Java, with 90 million, presents a much more diversified picture and does not lend itself to the kind of thumbnail sketch I am undertaking here. Hence no epitome of the Indonesian experience is intended.) Bali's total fertility was 5.7 as recently as the late 1960s, falling to a level probably below 4 a decade later.⁸ The estimates are not without problems, but no one disputes that a sharp decline has occurred. What accounts for the apparent extreme receptivity of the Balinese to the belated official antinatalist effort (begun in the late 1960s)? Short of a careful and lengthy analysis that I do not intend to embark on here, explanations inevitably will be more than a little speculative; but in this instance the outlines at least seem fairly clear cut.

Start with Balinese local organizational structure. In a brief but classic account of this, Clifford Geertz (1959) has conceptualized village-level structure in terms of "the intersection of theoretically separable planes of social organization," each plane comprising social institutions based on a specific principle of affiliation. Seven such planes were identified, defined respectively by: temple congregation; hamlet residence; ownership of land in the same watershed; similarity of caste; consanguineal or affinal kinship ties; membership of a particular voluntary organization; and location in the same local administrative unit (above the hamlet). In each case, formal social groups using that particular basis of affiliation could be found, ranging from tightly organized, long-term irrigation societies to

loose, ad hoc voluntary associations such as one formed to hunt coconut squirrels. For the individual Balinese, the picture is of an intricate overlay of "memberships," with diverse kinds and strengths of obligation, but with this very diversity and overdetermination of obligations offering a considerable degree of flexibility of choice. For village structure (and Geertz's interest, in this study, is essentially typological), the picture is of "a differentiated and multidimensional social space within which actual Balinese village organizations are necessarily distributed" (p. 1010).

The high fertility patterns that Bali experienced up to the end of the 1960s fit readily into this "structured anarchy" of local life. The hamlet grouping, where it might be expected that adverse effects from high fertility would be most felt (natural increase exceeded 2 percent per year at least from the 1950s; rural density then already averaged above 400 persons per sq. km. of cultivated land), had some basic legal, political and economic functions (it could control immigration, tax its members, organize corvee labor), but remained one social dimension among many. On at least several other planes, social interests would more likely favor than disfavor large families.

What then happened? Bali, where the Communist Party had been broad-based and strong in the early 1960s, was the scene of widespread killings of Party members and sympathizers in the aftermath of the 1965 attempted coup in Indonesia. The military and members of Muslim youth organizations coming across from East Java took a prominent role in the island's local administration over succeeding months. With slowly returning normality, this administrative system emerged greatly strengthened, a major contributor to this strength being its capacity to mobilize and work through the constituent hamlets (4 or 5 of which on average made up the lowest official administrative

entity) free of significant countervailing political or social interests. Indeed, political and administrative structures became indistinguishable. The new structural alignment was providential for the national government's newfound interest in fertility control, and it took no great insight for the provincial authorities to press responsibility for meeting administratively set targets of numbers of "acceptors" of birth control services on to individual hamlets. In turn, the hamlet in its political capacity comfortably absorbed this new, quasi-political element into its social control functions --and low fertility clearly enough served the community's (qua community) own economic interests.

This interpretation of the Balinese case is of course a partial one, abstracting from concurrent changes in economic and cultural life--in particular, changes associated with the rapid expansion of tourism on the island in the 1970s. A fuller account of the context of fertility reduction in Bali would need to trace out these other processes and explore their interactions with institutional change.⁹

Bangladesh.¹⁰ Fertility in rural Bangladesh apparently has been roughly constant over recent decades, with a crude birth rate slightly over 40 per 1000. (Higher birth rate estimates also exist, but similarly without indications of significant declines.) The level is consistent with a population that has a very low female age at marriage and shows little use of contraception but where lengthy breastfeeding is practiced and couple separation resulting from death, divorce or occupational migration is an appreciable factor depressing birth rates. These are all characteristics of the present Bangladesh situation.

Why fertility should stay at this high level, at a rate that with present mortality doubles the population in a generation, can be seen by looking at the opportunities and constraints facing individuals. Firstly, there is an apparent economic rationale for large family size. For affluent landowners, children represent opportunities for the family's occupational diversification and hence for expansion or consolidation of its local power. Lower down, among middle and poor peasants, the evidence suggests that children become net producers early (by about age 12 for the average male child), while the consumption costs of early childhood tend to be sheltered within a patrilineal family; in addition, sons who have reached majority by the time their father dies are an important source of security for the widow and indeed for the family's assets.

Second, preserving the "prisoner's dilemma" aspects of the setting, the pattern of social organization in rural Bangladesh militates against the emergence of social pressures at the local level (or administrative pressures from higher levels) able to oppose high fertility. What are the outlines of this organization? The groupings most distinguishable in what to many observers is a comparatively atomistic society are based on kinship and patron-client ties. Clans, surrounding prominent families, may exert wide-ranging authority over their members' behavior, including marriage and disposition of property. Larger factional groups, also typically with a lineage core, and with a fluid territorial base, dominate the local political landscape and to a large extent monopolize relations with higher levels of government--including having a major role in agricultural factor and product markets. In contrast, for reasons found in Bangladesh's geography and colonial history, hamlets, locally defined villages, and administrative villages all have little role in

the society--certainly in comparison with their significance in much of the rest of South and East Asia.

High fertility is no direct threat to the economic or political interests of kin and patronage groups--interests which in essence are those of the dominant families within them. The numbers and rights of the fringe membership of such groups can adjust to permit maintenance or further accumulation of per capita resources at the core. Families at or beyond the margins of the patronage system bear the major part of the short-run costs of continued high fertility in the society, although costs are also shared more widely through the high levels of economic and mortality risk and through the uniformly disadvantaged position of women. In the longer run, the society is in a sense transferring demographic costs forward in time, mortgaging its own future generations. For a transition to low fertility to occur in Bangladesh, if this analysis is correct, the institutional setting would have to shift in such a way as to lessen either the opportunity for shedding demographic costs in this manner or the advantage in doing so. Given the initial conditions set by the present rural social structure, the range of possibilities for such a shift is not large; relying on the emergence of natural pressures as the situation worsens to effect it probably does not give a result within that range.

Congenial as it may be (and I certainly find it so), what is the status, as theory, of the mode of fertility analysis illustrated in these three examples? A major source of unease with it is the feeling one has that too much is left to the researcher's ingenuity: that, for example, were it to be

discovered that the fertility patterns explained had by mischance been erroneously estimated and quite different patterns in fact prevailed, any social scientist worth his salt could in short order produce a new explanation, equally satisfactory, for the revised patterns. That unease, of course, can readily be kept in check. Persuasive post hoc reasoning is essentially the present state of the art. But it is worth exploring what might be entailed in moving toward a firmer--and ultimately predictive--basis for analysis of institutional determinants of fertility.

The two chief missing components in this enterprise, I would argue, are first, an adequate model of individual decision making, able to show how institutional factors mesh with conventional income and price changes on the one hand and cultural change on the other in influencing decisions bearing on fertility; and second, an understanding of institutional change itself, since contingent fertility predictions starting from an institutional setting, though valuable, do not get us very far. A third problem, interwoven with both of these two, is the poverty of our empirical measures of institutional forms and dynamics. These three problem areas are examined in the next three sections of this paper.

Administrative Man at Large

The main weakness of this post hoc explanation of fertility change is its cavalier treatment of how exactly fertility adapts to changing economic and institutional settings. At the extreme, there is no problem: no one would dispute that application of enough pressure will alter behavioral outcomes, but that is of little analytical interest (and, most would agree, should have equally limited public policy import). Similarly, over the long

term, looking at fluctuations or secular trends in fertility over decades or centuries, the problem is submerged: changed settings are experienced by new generations, and the explanations of links between, say, marriage rates and wage-rent ratios make little demand on theorizing subtlety. For shorter periods and situations where choice is genuine, however, we fall back for analysis on some model of individual decision making, appropriately refined for the task. The consumer choice models that have been widely applied in fertility analysis do not seem well suited to explore influences on individual decision making beyond the most tangible and easily costed. Much of the power of modern consumer choice theory, in fact, comes precisely from the short shrift it accords to institutional and cultural constraints. While continued work on these lines will certainly bear further fruit, attention should also be paid to alternative premises for a decision model--seeking some better fitted to describing institutional determinants of fertility.

That people make decisions on the basis of rules of thumb, highly incomplete investigation of relevant factors, or the most casual balancing of pros and cons, is no surprise to anyone. Such behavior is fitted into economic optimizing models, after allowing for tangible costs of information gathering, by imputing disutilities of effort, risk aversion, and similar additional preference dimensions designed to maintain the autonomy of economic explanation. Especially in the area of reproductive decisions, however, such elaborations increasingly appear as the epicycles of a theory pushed into diminishing returns of applicability. While no radical simplification of theory can reasonably be contemplated, it may be possible to devise a more satisfactory (in being more intrinsic) array of epicycles.

The starting point for the approach discussed here is the well-known concept of "administrative man" developed by H. A. Simon (1957) as a contrast to "economic man." Administrative man is not a global optimizer but is content with adaptive behavior within fairly narrow limits--he "recognizes that the world he perceives is a dramatically simplified model of the buzzing, blooming confusion that constitutes the real world," a simplification required by his limited computational capacity and acceptable because he believes "that most of the facts of the real world have no great relevance to any particular situation he is facing" (p. xxv). In Simon's term, administrative man "satisfices" rather than maximizes--behavior characterized by such criteria as fair price, adequate profit, a given share of the market, a quiet life. An individual's (subjective) rationality is thus bounded or segmented: at any particular decision juncture, only a few of the many available choices come to mind and are evaluated against each other.¹¹

How valid a description of behavior is this? It passes the test of casual empiricism and accord with introspection. On a more formal level, there is also evidence of similarity to descriptions of decision making by psychologists and there has been some progress in simulating actual behavior in its terms. For present purposes, however, questions of general validity can be set aside; the validation problem at the specific level of fertility behavior will be taken up later.

If it is accepted that individual behavior in organizations is characterized by what may be called "domains of consistency," what can be said about how such domains are delimited? Simon argues, in a further valuable insight I shall draw on, that the way in which decision environments facing individuals within an organization are segmented (why particular rules of thumb are

adopted, the limits set on investigating trade-offs, and so on) depends in important respects on how the organization itself is structured. The limits to human rationality, he writes (Simon, 1957, pp. 240-1) "are not static, but depend upon the organizational environment in which the individual's decision takes place. The task of administration is so to design this environment that the individual will approach as close as practicable to rationality (judged in terms of the organization's goals) in his decision."

Administrative man, of course, is simply man seen in an organizational setting. Administrative theory is a sliver rather than microcosm of general social theory only in that the settings of interest for it tend to be narrowly circumscribed, structurally simple, and open to a high degree of legitimate manipulation. The complicated mixture of institutional forms that constitute the setting of family life can also be dissected using concepts developed to analyze administrative behavior. In particular, Simon's view of the significance of decision environment in governing behavior in organizations extends readily and usefully to decision making in general, including decisions bearing on fertility.

In the fertility case, we would thus allow for segmentation of the decision environment--the existence of perceptual boundaries across which what to an observer might (albeit not necessarily) seem inconsistencies in decision making would not be recognized as such by the particular actor. Such boundaries could presumably be a consequence of institutional setting, cultural patterns, or personal idiosyncrasy (the last of which can reasonably be ignored). Their form--the positioning and strength of these boundaries--would depend on how institutional settings and cultural patterns routinely tended to juxtapose certain sets of issues and to isolate others, from the

standpoint of the actor. Persons placed differently in the society, particularly when categorized by sex, level of education, economic status, or birth cohort, would face somewhat different segmentations. Fertility decision outcomes, of course, are complicated not only by the idiosyncratic factor noted for exclusion above, but more significantly by the typical jointness of the decision making and hence by the dependence of outcome upon the relative power of those involved. For analytical purposes, there are advantages in conceptually restricting this jointness to the case of a married couple; where decisions are importantly influenced (or dictated) by others, such as often in the timing and choice of partner in marriage at young ages, this can enter as a more or less severe institutional or economic constraint on the individual concerned.

While this adaptation of Simonian concepts does allow institutional and cultural factors to be brought into apposition as fertility determinants, our present interest is focussed on the former. Here, the value of the construct of a segmented decision environment is not in giving potential decision-affecting force to cultural intangibles but in detailing the impact of quite palpable economic and institutional factors. In the cases of Guangdong, Bali, and Bangladesh discussed above, I believe that a delineation of that environment--adducing evidence of how various categories of individuals within it see the bounds of decision making domains change over time--is or would have been an achievable objective of empirical research, and the information resulting from such an investigation would go far to secure an institutional explanation of the course of fertility in those regions. (Some comments on such empirical work are made below.)

A few examples of how particular institutional settings may generate a segmented decision environment can perhaps clarify the argument. Some of these are sufficiently familiar or uncomplicated that recourse to this conceptualization may seem cumbersome; Occam's Razor should be wielded at a higher level of generality, however, and probably should take account of more diverse empirical returns than are currently in hand.

- Whether marriage decisions are made by the members of a couple themselves or by their parents is clearly a potentially important distinction for fertility outcomes. Different interests may be at stake, with the parents' own welfare or their view of the corporate family's interests over time dominating in the latter case. The preservation of parental control owes something to cultural norms in the society, but underlying and reinforcing such norms typically are property arrangements and available economic or social sanctions. From the standpoint of the individual couple member, two distinct domains of consistency relevant to fertility might be apparent in such a setting. The first, surrounding the marriage "decision," would be essentially concerned with management of parental relations (often from a position of weakness). The second would involve post-marriage family building strategy, interlinked economic behavior, and relations with spouse. Fertility consequences result not only from the usual young age of woman in an arranged marriage but also from this split in domains of consistency--plausibly, making for separate pursuit of husband's and wife's interests, with the husband's as a rule prevailing. The main fertility effect may be to dis-

courage recourse to birth control even in situations where it might be economically advantageous for the nuclear family group.

- The complexity of clientage patterns and their vulnerability under technological change and intruding values of "modern life" are recurring themes in the analysis of rural economic development. In early transitional settings employer-employee relations typically lie within a penumbra of responsibilities and expectations aside from a simple contract for labor services. For the worker, labor market decisions cannot be separated from the full range of the relationship, often involving the labor of family members, a credit system, an element of social security, and so on. What narrowly construed might seem behavior hard to explain, such as failure of insecure sharecroppers to take advantage of attractive proffered tenancy reforms, may turn out to be self-evident in terms of the full relationship.¹² The narrowing and fuller specification of labor contracts that takes place with formalization of the labor market and monetization of exchange relations (whether on the initiative of employer or employee) isolates and starkens the economic calculus that workers must apply. The "isolation" effect may be simply a lopping off of certain insurance features of the earlier situation --analytically, a straightforward shift in the economic environment. But more significant in influencing demographic behavior may be a concurrent shrinking of the domain of consistency surrounding family economic decisions--the "starkening" effect on the economic calculus. Perceptions of the economic values and costs of children stand out more clearly within this smaller domain and hence fertility for the first time may become an important object of decision.

- Notwithstanding the strong liking of economists for uniform rates of time preference across all decisions by an individual, empirically this may not be the case. The need for long-haul risk management, either by and for individual parents over their lifetime or by and for the family conceived as an ongoing corporate entity, may set up a domain of consistency separate from the domain of short-run economic decisions. For example, a near zero rate of time preference may apply in the former domain (such as with reference to old age support perhaps decades in the future), while a high rate of time preference is implicit in the latter. Decisions on family size and timing of births may typically be counted in the former, as an aspect of family risk management. Development of secure financial institutions in the economy eventually breaks down the boundary between these domains.

- Historically in many parts of both Europe and Asia rural communities defined by residence exercised substantial influence over behavior of members. This influence weakened as communities "opened"--for example, as labor markets widened, transport systems improved, and national governments assumed new functions and acquired stronger administrative capacities. Conversely, where changes in institutional settings fortuitously or through deliberate government policy led back to "closed" communities, internal pressures to conformity were reinforced.¹³ As a community opens, the individual member has to take account of its interests in fewer and smaller areas of behavior, and those interests themselves involve less concern with population size. Ultimately community interests may (as in incorporated towns in many developed countries) be limited to such trivial areas as plumbing or lawn mowing. For fertility change, the route by which community influence is weakened and the

nature of the institutions that usurp or take on that influence are likely to be critical in determining the course. Tracing these changing sources of influence is to structure the fertility decision making environment.

- The cursory discussions earlier of the institutional contexts of fertility decline in Guangdong and Bali indicate a distinctive kind of segmentation set up as deliberate policy, albeit not deliberate population policy. In both cases, fertility control has operated by linking fertility decision making to other decisions within the province of local administration (or local community, acting in a quasi-administrative capacity), and attempting to weaken or even sever its link with family economic strategies. For the individual, the boundary of the resulting two domains must appear starkly evident: tradeoffs across that boundary are to be impermissible.

These examples where I have argued that particular institutional forms have influenced the way people delimit the range of alternative courses of action to be considered, could be complemented by cases in which similar constraints are held to be generated by cultural settings. For instance, it may be argued that images of family life--in particular, expectations and obligations involving filial piety--are established by socialization and acculturation, an "Easterlin effect" on the one hand, countered or supplemented by a "Caldwell effect" (of textbook images, popular magazines, broadcasting, etc.) on the other.¹⁴ The presumed result is that family size decisions aim to recreate this instilled image, whether it be the prosperity recalled from youth or a television version of the modern family. As a second

instance, practices of breastfeeding or postpartum abstinence may be linked to beliefs about ritual purity or about quality of infant feeding, with no connection to their large demographic consequences. Discussion of these arguments, however, lies beyond the scope of the present paper.

Institutional Statics and Dynamics

Exploring how institutional settings can influence the fertility decision making environment facing individuals is one part of the program embarked on in this paper. The other part, since institutional patterns and directions of change in a society do not make a firm platform on which theory can be built, is to investigate the forms and dynamics of the institutional setting itself. Two streams of thinking are especially relevant to this second task: what might be described as the transaction costs theory of institutional structure, brought to bear on fertility theorizing in important recent contributions by Ben Porath, and the still slight beginnings of an economic theory of institutional change.

Transaction costs theory dates from an influential paper by Ronald Coase (1937) depicting the organization of production as a cost-minimizing arrangement of transactions defining the boundaries of firms. Firms, in this view, are simply devices which allow economizing on transaction costs. An entrepreneur can set up a local domain within which exchange transactions under his direction supplant exchanges governed by the market, and he will find it profitable to do so if he can thereby improve on market efficiency--improvement rendered feasible by the costs entailed in using the price system.¹⁵ A firm will tend to expand until the costs of organizing further transactions

within it equal the costs of the same transactions in another firm or in the open market.

Economic geographers, following Christaller and Losch, applied a conceptually analogous argument to the spatial organization of marketing. It is found that transportation cost minimization by consumers and competition among supplying firms give rise to a distinctive geometry of market areas. The boundary of a market area has less to it than the boundary of a firm, but is not without significance for social organization.¹⁶

A close look at the transactions generating the structure in these cases shows that more is going on than simple economic exchange. For example, possibilities for cheating or threat may exist, the reputations of the parties may enter, and the long-termness of the relationship may introduce additional considerations. These factors also affect the organizational outcomes; exploring the nature of these effects lays the groundwork for an economic analysis of institutional structure in general. For the firm, an elaboration of this sort has been undertaken by Alchian and Demsetz (1972); for the family and local market organization, by Ben Porath (1978, 1980). Recent work on the theory of contract (Macneil, 1978; Macaulay, 1963; Williamson, 1979) provides important conceptual underpinnings for this analysis by expanding the notion of contract to cover a wide range of stable relationships among individuals or groups, differing in establishment and maintenance costs and in institutional demands.¹⁷ In prospect is the possibility of relating the characteristics of particular transactions to the kind of contract or merger likely to develop to encompass them and to the most efficient form of administrative or "governance" structures needed to give contractual stability.

Williamson (1979) goes some way in this direction. He identifies three attributes or dimensions for describing transactions: frequency (whether a transaction is a single event, occasional, or recurrent); idiosyncrasy (the extent to which investment in the exchange by the parties is transaction-specific--for example, where trust in a relationship is built up, or where the spirit rather than letter of a contract is accepted as operative); and uncertainty (how unsure one side is of the other's fulfilling the exchange). These attributes strongly influence, though they do not dictate, how the supervening institutional setting is shaped: where mergers are formed rather than complex contracts and, in the former case, the size and membership criteria of the resulting organization; and the kinds of transactions that are linked together under the same institution--in other words, the functions of that institution.

More immediately relevant for fertility theory is Ben Porath's (1980) detailed analysis of recurrent, idiosyncratic exchange within the family and in the local economy. At this level the identity of partners is necessarily an element of the transaction. A particular transaction is then one event in a continuing relationship, the management of which may introduce considerations that dominate the immediate balance of the exchange. From this standpoint, the family is seen as a social device for minimizing (over the long run) a broad array of transaction costs--not the single decision making unit posited in the household production function model but a bundle of individuals bound by implicit (or occasionally explicit) contracts, a kind of miniature Coasian firm.

Seeking the explanation for institutional arrangements in transactional attributes may reasonably be objected to for its implying commonalities across

different societies (in family and kin-groups, community organization, implicit intergenerational contracts, and so on). Commonality is not very apparent below the most general level: the distinctive history and material circumstances of each society have their own institutional consequences, introducing a degree of diversity to institutional forms that obscures any simple or one-to-one relationship with transactions. Recognition of a transactional base does, however, point to an important source of resilience of institutional forms, at least to arbitrary interventions, and also to some requirements for a theory of institutional change.

If institutions can be seen as locally least-cost arrangements contingent in part on a given array of transactions, then shifts in these transactions (for example, as a result of new technologies or new resource flows) will tend to induce changes in institutional forms. The direction of institutional change can often be understood in these terms. In Coase's firm, improvements in communications and data processing technology and in managerial techniques reduce the cost of organizing and thus tend to increase firm size. In rural economies, new transport systems, such as the recent motor cycle and minibus "revolutions" in many developing countries, can drastically alter the structure of market areas. More generally, any new income stream in the economy is open to capture by suitably positioned and supported groupings, which are thereby strengthened.¹⁸ Detecting the influence of this institutional ferment on the setting in which fertility decisions are made may be no easy task. The fertility incentives implicitly set up by a particular institutional arrangement are likely to be almost wholly incidental to the forces that generated it; fertility outcomes and the kinds of interventions remaining at hand to influence fertility, however, may be markedly affected.

The transactional logic of institutional settings and dynamics is likely to be overlooked in government attempts to alter institutional arrangements, which probably accounts for the poor success record of such attempts. There is evidently a "critical minimum effort" required in many of these measures --an effort that may well entail considerable costs offsetting the hoped-for gains. The example pointed to earlier of the abortive 1958-60 effort in China to establish communes as genuinely collective units rather than simply administrative centers is a notable instance; a quite similar attempt, lacking the ideological element but equally a failure, occurred in the administrative history of early Meiji Japan.¹⁹ Where institutional inertia is decisively overridden by government action, the objectives are almost invariably political; a favorably-regarded demographic outcome, should that happen, is a more or less fortuitous result.

But dramatic instances of transformations of social structure, politically laden and socially costly, should not be seen as the sole mode of induced institutional change. As understanding of the relationships between institutional forms and the nature of the transactions they encompass is deepened, opportunities for marginal intervention are likely to become apparent. In the case of fertility, the prospect of such opportunities remains a major hope for humane policy.

Some Notes on Empirical Research Directions

Whether or not the approach set out above proves valuable for analyzing institutional determinants of fertility will depend on the empirical content it can be given. The empirical problems to be confronted are not necessarily intrinsically more difficult than those met in other approaches but are less

well supplied with conventional solutions. The problems can be conveniently described in the course of a brief recapitulation of the argument.

Segmented decision environments. Fertility behavior takes place in a particular institutional and cultural environment, and responds to changes in that environment. The argument presented above started from the assumption that a person does not experience this environment as a whole, but as a series of domains, within each of which behavior is adaptive--that is, (subjectively) rational. This structuring or segmentation of the perceived environment establishes the premises of the relevant decisions (except for idiosyncratic premises), by bringing certain factors into apposition and pushing others--on the surface perhaps equally germane--out of the picture.

The pressing empirical issues here are concerned not with existence of this segmentation but with its analytical usefulness as a construct. Can domains of consistency be empirically delineated and shifts in them over time be measured? Can such shifts be linked to patterns of institutional and cultural change in the society? And can an explanation in these terms add significantly to the variance accounted for in specific instances of fertility change?

Delineation of domains of consistency relevant to decisions bearing on fertility is an obviously difficult task, calling for careful interpretive analysis. The chief research instrument would ideally be something midway between a sample survey and anthropological study--extended, structured interviews with a comparatively small number of respondents.²⁰ This is not just an exercise in sociocultural analysis, since much of any segmentation that is uncovered is likely to be firmly grounded in the material realities of the situation.²¹ Attempts to trace this grounding--exploring the factors

in the institutional and cultural environment that appear to generate domains of consistency--would require marshalling of existing sociographic studies or additional field research.

It is not clear how much scope exists here for formal analysis of fertility decision settings, but the possibility seems quite strong that the relevant domains would prove to be structurally simple and hence readily amenable to formal description. If so, major research economies might be achievable by permitting changes in settings and in the domains they generate to be monitored through much less elaborate procedures.

On the critical issue of the empirical significance of this approach to institutional determinants, no assessment can be made at such an early stage. There are likely to be many cases where identification of a domain of consistency surrounding fertility decisions adds nothing to a conventional economic analysis of the course of fertility. An obvious example would be if the domain in question were very large. In other situations an observed pattern of institutional change may be simply and adequately modelled by shifts in the economic constraints imposed on individual behavior. But especially for societies undergoing rapid institutional and cultural change--which would describe a substantial number of developing nations--the approach outlined here shows promise of enabling these various putative determinants of fertility to be brought together in a systematic and empirically accessible way.²²

While one might guess that most of the time the particular changes in segmentation induced by institutional or cultural change associated with development would consist of steady expansion in the range of alternative behaviors assessed, other possibilities exist. One that is of some potential interest is the possibility for a rapid breaking down of a domain boundary--a

"catastrophe," to use the currently fashionable mathematical metaphor—where suddenly whole new sets of premises are brought to bear on a decision, with consequent scope for radically altered behavior. Another possibility is for forceful policy intervention by government authority, altering the institutional rules of the game in a way that (perhaps fortuitously) narrows the tradeoffs that can be contemplated.

The cases of rural Guangdong and Bali discussed earlier might well be seen as instances of this latter situation, but the empirical details needed to confirm such an interpretation are not yet available. Take Bali as an illustration: the empirical efforts called for above might plausibly lead to one or other of these two results (without by any means exhausting the possibilities):

- In the new tourist based economy parental decisions on the marginal child might typically take account of fewer cultural and administrative constraints than before, and weigh a larger range of economic considerations. The net impact of such economic "liberalization" on fertility can plausibly be assumed to be downward, in accord with the classic view of demographic transition in the course of modernization--and also in accord with the most straightforward view of how family planning programs impinge on fertility. In terms of segmented decision environments, the shift would correspond to a radical widening of the domain of consistency for fertility decisions so as to incorporate most other factors touching family economic circumstances.
- Alternatively, it may turn out that the arena for adaptive behavior in fertility has not grown, but if anything has shrunk; and has been shifted

away from the economic realm (perhaps also away from many former cultural influences). What remains might be a domain defined by a new alliance of political, administrative and demographic interests which, if not targeted with the radical specificity of China's current "one-child family" campaign, can still wield a potent array of sanctions against administratively disfavored fertility outcomes.

Wholly on the cards, of course, is a fuzzy answer that does not clearly discriminate between the two but suggests certain elements of each.

Characterizing institutions and institutional change. Institutions have been depicted in this paper as more or less stable social or economic arrangements, the form of which depends in part on an underlying logic of transactional attributes. While a theory of institutional structure and change of certified validity is not available off the shelf, the collection of insights in this area developed over recent years--drawing on new developments in contract and property rights theory and on analogies with theories of induced technological change--makes an impressive start. These insights can only benefit the understanding of fertility settings and outcomes.

Still lacking, however, are well-designed empirical measures of the forms and dynamics of fertility-relevant institutions, and hence also what these measures would be needed for: well-constructed typologies of institutional settings. Ad hoc typologies are implicit in many individual studies of demographic change, but comparative analysis has been hampered by trying to rely on the set of conventional indices routinely compiled by census bureaus and preserved by survey questionnaire designers.²³ We can readily learn, for example, whether a village has a school or health clinic and yet know

nothing about the local realpolitik of how these services are financed or about local perceptions of their quality and value. (As this example makes clear, the data problem in this area is not so much with the information that surveys do collect--greatly improvable though that would be--as with the present sparseness and lack of comparability of the information that we would like to possess but that conventional surveys are ill-fitted to give us.)

The various case studies and illustrations in this paper indicate some kinds of factors that plausibly should enter institutional typologies--in particular, characteristics of local social and administrative organization and categorization of the ways this structure meshes with or exists apart from the economic system--but their refinement calls for a good deal more exploratory work. Simple compilation of standardized quantitative information on local administrative structure, or comparative tabulations of qualitative characteristics of the various kinds of local social groupings (such as is done for Bangladesh in Arthur and McNicoll, 1978), would be a step forward. Replication of sophisticated, quantitative studies of social change covering both institutional and cultural aspects, as is represented by Parish and Whyte's work on China, would be a giant stride.

It is appropriate to end with this stress on the inadequacy of both measures of and comparative data on institutional change, since the scope for armchair theorizing on this aspect of fertility determination seems close to being exhausted. I have little doubt that empirical progress in this area would deepen our understanding of the forces governing fertility trends, and, not incidentally, of the limits of public policy in influencing fertility.

FOOTNOTES

1. See, for example, the recent pronouncement from a source as respectable as the field can muster--the International Review Group of Social Science Research on Population and Development (1979, p. 91): "Perhaps the most striking aspect of the present state of knowledge on fertility is the absence of an accepted theory of fertility change. The demographic transition has been an object of study in demography for over 25 years, and yet no satisfactory or proven theory is at hand to explain the phenomenon either in now-developed or in the presently developing countries." (It could certainly be maintained that this sweeping dismissal of past efforts is a little too unqualified.)
2. Drawing on Isaiah Berlin's classic categorization of thinkers into hedgehogs and foxes, it seems clear that while historians can plausibly be of either sort, the makeup of social scientists (except perhaps at the butterfly-collecting extreme of anthropology) had better be predominantly hedgehog.
3. Becker (1976). The comparatively few empirical studies applying this framework to developing country data typically hew to a simple "full income" welfare criterion, but declare satisfaction with quite low levels of explained variance.
4. Findings from the reanalysis by Barclay et al. (1976) of the 1929-31 socioeconomic survey directed by J. L. Buck.
5. US Foreign Broadcast Information Service daily report on the Guangdong Provincial Service for 3 December 1978 (reprinted in Population and Development Review 5(1):186-187).
6. The study reconstructs the course of social change and persuasively traces out its determinants in 63 Guangdong villages on the basis of lengthy interviews with emigrants in Hong Kong. The authors' interest in demographic change is only marginal but there is little difficulty in fitting it into their findings.
7. Chairman Hua Guofeng, in his report to the Fifth National People's Congress, 26 February 1978, cited Marx's famous distributive principle in its sterner variant (the form in which it appeared in the 1936 Soviet constitution): "from each according to his ability, to each according to his work." (See Population and Development Review 4(1):167-179.)
8. See Hull, Hull and Singarimbun (1977) and Suharto and Cho (1978).
9. In their discussion of Bali, Hull, Hull and Singarimbun (1977), for example, argue along quite different lines: a strong, preexisting "latent demand" for birth control, associated with a high female labor force participation rate and substantial "unwanted" fertility, was catered to by a vigorous and imaginative family planning program,

relying on "a highly developed clinical infrastructure" in the province. A balanced account of the Balinese case would clearly have to weigh this perspective as well.

10. This discussion draws on Arthur and McNicoll (1978) and on the valuable empirical studies by Cain (1977, 1973).
11. A related set of concepts upon which a somewhat different non-globally optimizing decision making calculus can be erected has been developed by Leibenstein (1976).
12. No romanticized view of clientage is suggested. For example, in a microstudy of the impact of Philippine land reform, Fegan (1972) notes no fewer than 19 common retaliatory steps open to landowners faced by tenants wanting to claim the secure leasehold rights promised them in the reform--ranging from denial of consumption loans prior to the harvest, to manipulations of the legal system to muddy the title and tie up the tenant in litigation, and direct physical intimidation. Popkin's (1978) portrayal of the moral economist's view of peasant society ("what might only have been the necessities or oppressions of one era come to be interpreted as traditional values during the next"); is a caricature intended to highlight the supposedly hardnosed view of the political economist.
13. On possibilities for reversal of the customarily assumed trend from closure to openness, see Skinner (1971).
14. Freedman et al. (1976) and Caldwell (1976).
15. The costs of using the price mechanism in allocation include the cost of discovering what the relevant prices are; the cost of negotiating separate contracts for each exchange transaction; the need to provide for contingencies, since there are likely to be uncertainties that prevent full specification of terms of exchange (this giving an advantage to long-run contractual relationships); and the different fiscal and regulatory treatment accorded transactions in the market in comparison to transactions within firms.
16. In the idealized case, firms are grouped into central places located on a triangular grid pattern, serving hexagonal market areas. See Skinner (1965) on market areas in China and their influence on the structuring of the modern communes. Bertocci (1976) argues that the market area in rural Bangladesh represents a possible organizational base for rural development.
17. The distinction among "classical," "neoclassical," and "relational" contracts, introduced by Macneil (1978), is a valuable contribution to this analysis. A classical contract is a fully specified, self-liquidating agreement; a neoclassical contract is more flexible, typically long-term, and uses some form of arbitration to resolve disputes; a "relational contract" is a multi-faceted, evolving relationship with its

own norms and with dimensions to it beyond those immediately concerned with the original exchange.

18. Much local-level organizational activity in poor countries is directed less at such efforts to capture a greater share of social product than at limiting the imposition on members of costs incurred by others in the society. Ruttan (1978) presents a pioneering investigation of institutional change seen from this standpoint: as an outcome of efforts by economic units (households, firms or government agencies) to capture the gains from economic activity and to avoid the costs, set against efforts by the broader society to force economic units to bear the costs and yield up the gains.
19. See Fukutake (1972), p. 170.
20. The study design arrived at, with much preliminary agonizing, by Busfield and Paddon (1977) is an interesting effort along these lines; the earlier and now classic study by Rainwater (1960) uses a similar research instrument but with less ambitious theoretical intent. (While particularly rare in the field of population, the genre is not common in the broader reaches of studies of social change.)
21. See McNicoll (1978), pp. 92-94.
22. Coping with cultural change has been a problem long bedeviling fertility analysts, who often seem to have in mind some process of ethereal diffusion. Although not explored in this paper, I believe the approach laid out here holds some promise for banishing the ether.
23. An opportunity to overcome this inertia (missed, I would argue) came in designing the community module of the World Fertility Survey.

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