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Reproductive Individualism And Divorce: An Examination Of Attitudes And Marriage Dissolution In Canada

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REPRODUCTIVE INDIVIDUALISM AND DIVORCE: AN EXAMINATION OF ATTITUDES AND MARRIAGE DISSOLUTION IN CANADA

by

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ABSTRACT

In documenting the dramatic increase in divorce in recent decades, several observers have uncovered strong empirical associations between religiosity and marriage dissolution. As well, many studies show a substantial relationship between premarital cohabitation and the risk of divorce.

What is it about religiosity and cohabitation that explains these statistical links to divorce? The main objective of this inquiry was to answer this question by placing marriage dissolution within a sociological framework. Building on concepts and ideas developed in the sociological theory of Anthony Giddens, it was argued that the recent proliferation of "expert systems" of knowledge and technology in the area of human reproduction has rapidly altered the social context and motivations for childbearing and childrearing.

Specifically, the thesis developed the idea that reproductive individualism has emerged as an important motivational and normative basis of marriage and family formation in modern society. Moreover, the theory developed in the study identifies reproductive individualism as a variable that might account for the documented associations among religiosity, cohabitation and divorce.

Using data from the 1984 Canadian Fertility Survey, a single factor analytic scale measuring reproductive individualism was constructed. A series of hazard models of divorce were subsequently developed to investigate the issues raised by the thesis. The results of the inquiry show that reproductive individualism is a major predictor of the risk of marriage dissolution. Additionally, reproductive individualism entirely explains the relationship between premarital cohabitation and divorce. Finally, reproductive individualist attitudes account for much of the statistical relationship between religiosity and divorce.

The general conclusion of the inquiry is that theoretically-grounded concepts such as reproductive individualism are essential to understanding contemporary trends in social demography. However, the sociological relevance of reproductive individualism may extend well beyond recent changes in marriage and the family. Indeed, the theory developed in the thesis implies that reproductive individualism has great potential to legitimize the commodification of human life by new reproductive technologies.

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The second restriction is especially troublesome in view of the fact that over two decades of experimental studies in psychology have found little empirical support for subjective expected utility theory—the theoretical foundation for most rational choice decision-making models. Instead, experiments have identified several sociocultural variables and cognitive biases that are deeply involved in most processes of human deliberation. Moreover, these biases and social variables materially undercut conscious efforts by individuals to incorporate even rudimentary rational-choice processes into their thinking (Eiser and van der Pligt, 1988:75-102). As Eiser and Plight conclude in their recent review of research on the social psychology of human decision-making:

> People seem to rely on simple heuristics for
> making probability judgements and hardly seem
> to think about more complex combinations of values
> or utilities involved in a decision. In other
> words, people's decision processes seem relatively
> inarticulated and are hardly compatible with the
> sort of rigorous, systematic thinking required
> by SEU (subjective expected utility) formulations
> that involve a considerable number of possible
> consequences. (Eiser and van der Pligt, 1988:80).

To be sure, rational-choice models are intellectually appealing because of their parsimony and rigor. However, these attributes are purchased at the unacceptable cost of assumptions that have a rather weak empirical foundation. Therefore, insofar as Lesthaeghe attempts to reduce social-demographic behavior to personal "utility functions" guided by the values of free choice and autonomy, his theory will fall short of adequately explaining how social changes relate to change in the family.

The main objective of this study will be to advance our understanding of these empirical associations between religiosity, premarital cohabitation, and family formation in modern society. This objective will be pursued by reconceptualizing existing statistical associations into a theoretical understanding of the relationship between the subjective state of individuals and their social behavior. Of special concern will be an hypothesized relationship between the subjective state described by the concept of reproductive individualism and the probability of experiencing marital dissolution.

Reproductive individualism is the organizing concept and explanatory variable in this thesis. Although the concept has its genesis in Ron Lesthaeghe's (1983;1988) work on "secular individualism", we will venture well beyond Lesthaeghe in the course of this study. Indeed, a critical assessment of Lesthaeghe's ideas will serve as the catalyst for placing the relationship between individualism and changes in family formation within a sociological framework.

IDEATIONAL CULTURE AND SOCIAL DEMOGRAPHY

The remarkable and unanticipated transformations in marriage and the family since the 1960s has underscored the need for building a social theory of family and demographic change in the developed world (Burch, 1990; Hammel, 1990). In this regard, Ron Lesthaeghe has consistently sought to shed light on the possible theoretical connections between

socio-cultural and demographic variables. His work is especially germane to this study because he has made a serious effort to understand the role of religious belief in explaining social demographic change.

Lesthaeghe (1983) argues that both the historical decline in marital fertility and recent transformations in family structure are manifestations of long-term change in Western "ideational" culture. The "underlying dimension" within Western culture held responsible for social and demographic change has been the growth in the legitimacy of "secular individualism." Secular individualism is defined by Lesthaeghe as an ideology characterized by "the pursuit of personal goals devoid of references to a cohesive and overarching religious or philosophical construct" (Lesthaeghe, 1983:415).

Although Lesthaeghe traces secular individualist ideology back to Enlightenment ideals concerning freedom of choice, he also implicates various political and economic developments in the rise of secular individualism. In particular, the gains in prosperity engendered by capitalist industrialism have contributed by fueling personal aspirations and reducing feelings of personal economic vulnerability. At the same time, the emergence of the modern welfare state rendered the "social contract" an abstraction by mediating social ties and obligations to others. That is, people came to rely on state and private social service

bureaucracies to help those in need and were much less directly involved in caring for others in their society.

Lesthaeghe believes that these political and economic developments have eroded traditional values concerning social solidarity, and brought about a major ideational and value shift in Western society from a group-orientation to a self-orientation (Lesthaeghe, 1983: 412-432)

Significantly, Lesthaeghe's (1983) study discovered that "ideational involvement in religion" posed a major obstacle to the spread of secular individualist values and ideas. He did not elaborate on exactly how religiosity counters secular individualism other than to suggest that religion champions more traditional forms of social solidarity. (Lesthaeghe, 1983:420-429).

Lesthaeghe and Surkyn (1988) pursue the relationship between religion and secular individualism outlined in Lesthaeghe's (1983) study. They argue that religion institutionally and externally regulates individuals by systematically asserting cultural ideas, values, and norms that curb individualism. As Western societies became more secular--and religious institutions were reduced to "a subsystem of society"--the collective assertion and taken-for-granted legitimacy of religious ideas and morality was steadily undermined. In the absence of compelling institutionally based constraints, the public expression of private ideas and values became more tolerable. Accordingly,

secularization and individuation evolved together and moved pluralism to the core of Western culture (Lesthaeghe and Surkyn, 1988:8-13).

Lesthaeghe and Surkyn's account of the growth of secularization and individuation is part of a larger thesis on social and historical change. Central to their thesis is a "dialectic" between emerging social needs and existing social institutions. Drawing from Abraham Maslow's (1954) psychology of a hierarchy of needs, Lesthaeghe and Surkyn contend that relative gains in affluence during periods of economic growth generate a "Maslowian" shift in populations from "lower order needs" to "higher order needs." The inability of existing social institutions to satisfy emerging higher-order needs generates popular disenchantment with existing social arrangements and commensurate pressures for institutional change. Over time the authority of social institutions in general, and organized religion in particular, lose ground to a cultural ideology that stresses free choice, moral pluralism, and a social psychology of self-actualization (Lesthaeghe and Surkyn, 1988:1-45). While there are periodic backward movements towards greater levels of institutional or externally-based authority, Lesthaeghe and Surkyn assume that long-term gains in affluence assure the hegemony of secular individualism within Western societies.

SECULAR INDIVIDUALISM AND THE SECOND DEMOGRAPHIC TRANSITION

In his current work, Lesthaeghe (1991) brings his thinking directly to bear on the unprecedented social and demographic changes in the developed world since the 1960s. He declares that a "Maslowian escalator of needs" underlies the embrace of the ideas of free choice and personal autonomy in affluent societies. As far as Lesthaeghe is concerned, this trend towards secular individuation signals the end of institutionally-based authority within Western culture.

Lesthaeghe argues that social or externally-located norms and values no longer directly inform personal decisions regarding social demographic behavior. In place of societal norms and values, personal standards and concerns involving self-actualization and autonomy serve as internal referents that directly inform individual "utility functions." Without offering many details, Lesthaeghe acknowledges that changes in areas such as contraception and the mass media are reciprocally related to the triumph of free choice and autonomy within contemporary culture (Lesthaeghe, 1991:1-25).

A CRITICAL ASSESSMENT OF LESTHAEGHE'S THESIS

It is clear that Lesthaeghe's work underscores the importance of ideological factors in any theoretical account of social demographic behavior. Furthermore, he has offered suggestive links between the decline of religion, the rise of secular individualism, and recent change in

marital and family structure. Notwithstanding these
contributions, Lesthaeghe's theory is sociologically
underdeveloped--in large part because of Lesthaeghe's belief
in the veracity of rational-choice models of human behavior.
Consequently, his attempt at a theoretical synthesis of
sociology and economics founders on an asocial and
reductionist model of human social action.

   To begin with, Lesthaeghe assumes an untenable
Durkheimian position by claiming that the impact of social
forces on behavior declines in step with the erosion of
institutional authority. Because of this position, what
Lesthaeghe has produced looks more like a rationale for the
spread of rational-choice decision-making than a social
theory of demographic behavior. In the final analysis, only
the values of personal autonomy and free choice survive as
relevant sociological forces in Lesthaeghe's theory.

   The reductionism in Lesthaeghe's work does not allow
his theory to adequately integrate social demographic
behavior with the social milieu in which it occurs. For
instance, in his most recent work Lesthaeghe (1991) comments
that unmarried cohabitation is "essentially a trial run in
matching two utility functions." Likewise, higher separation
rates among cohabitors are dismissed as the result of
"frustrations with the difficulty in trying to match two
utility functions" (Lesthaeghe, 1991:7). Finally, the
quality of interpersonal relationships in modern society is
seen to be contingent on "the mutual willingness of merging

utility functions" or the optimization of individual utility that follows from a couple having common tastes (Lesthaeghe, 1991:5-8).

Whatever rigor and parsimony is promised in such phrases, the promise is unlikely to be realized. Unless one grants the assumption that social behavior is explicable in terms of standardized mental algorithms employed by individual decision makers, phases such as "the mutual willingness of merging utility functions" capture only one aspect of the multi-dimensional nature of modern social relationships. More important, by collapsing the complex and possibly chaotic dynamics of human psychology and social behavior into "utility functions", we foreclose serious theoretical and empirical inquiry into the possible nature of these dynamics. Complexity and chaos in social affairs remain plainly evident in reality, however, and render any theory that fails to incorporate this both incomplete and inadequate.

Lesthaeghe's narrow sociological perspective on social-demographic decisions and behavior produces some glaring inconsistencies in his work. To illustrate, in his early analyses Lesthaeghe declared that the cultural trend towards greater secularization and individuation was manifested in public support for environmentalism, feminism and leftist political values (Lesthaeghe, 1983:420-425; Lesthaeghe and Surkyn, 1988:14-16). In sharp contrast, current manifestations of the growth of secular individuation

are said to be evinced by popular support for consumerism, careerism, libertarian political values and a free market orientation (Lesthaeghe, 1991:9-10). How can we reconcile leftist and libertarian political values--or environmentalism and consumerism--as indicators of a coherent theoretical concept? Furthermore, even if these can be reconciled in theory, we might seriously question the practical use of a concept whose operational indicators are so remarkably variegate and inconsistent. In short, Lesthaeghe's theory does not allow us to deduce or anticipate how secular individualism will be empirically measured or behaviorally expressed from one year to the next.

Lesthaeghe does not recognize these problems because the coherence of his work seems to rely on an implicit tautology regarding the expression of ideational culture at any given time. Accordingly, Lesthaeghe does not create a theory of the relationship between social and individual change that enables us to deduce and predict social-demographic behavior. Instead, his thesis rests on the tacit assumption that various categories of thought and behavior-- however contradictory over time--are valid indicators of secular individualism. Why? Because these transient social indicators reflect the aggregate rational choices of secular individualists. Since secular individualists are presumed to form the majority in modern populations, and are influenced primarily by values of free choice and autonomy,

virtually any salient trend in attitudes and behavior that is manifested in society can be interpreted as measuring secular individualism.

The chief problem with this implicit tautology is that while it reconciles disparate empirical indicators of secular individualism, past and present, the framework does not allow us to determine, predict, and test the relationship between institutional, cultural, and behavioral change in the future.

As Barry Hindess (1988) argues, unstated tautology or determinism is common in most rational-choice theoretical models. Paradoxically, two unrealistic and reciprocal restrictions lend credibility to the deterministic assumptions of rational-choice based models. First, the relevance of macro-sociological phenomenon must be understood principally in terms of their impact on the alleged rational decision-making calculus of individuals. For example, in Lesthaeghe's most recent (1991) work, sociological changes such as the increase in female labor force participation are assessed primarily in terms of their impact on individual perceptions of cost and return, personal standards of quality, utility functions, and the like. Secondly, only forms and processes of human thought assumed to be true by rational-choice models can be of consequence to social action. Other paradigms of social behavior such as symbolic interactionism, phenomenology, or psychoanalytic theory must deal with forms and processes of human thought that are socially inconsequential (Hindess, 1988:93-118).

The second restriction is especially troublesome in view of the fact that over two decades of experimental studies in psychology have found little empirical support for subjective expected utility theory--the theoretical foundation for most rational choice decision-making models. Instead, experiments have identified several sociocultural variables and cognitive biases that are deeply involved in most processes of human deliberation. Moreover, these biases and social variables materially undercut conscious efforts by individuals to incorporate even rudimentary rational-choice processes into their thinking (Eiser and van der Pligt, 1988:75-102). As Eiser and Plight conclude in their recent review of research on the social psychology of human decision-making:

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MASLOW'S NEEDS AND HISTORICAL CHANGE

Lesthaeghe's ideas also suffer from an overdependence on Abraham Maslow's (1954) theory of a hierarchy of needs. Essentially, Lesthaeghe's thesis turns on the reductionist and deterministic assumption that a historical shift from Maslowian lower-order to higher-order needs has transpired in Western societies. As well, this "Maslowian escalator" leading from lower-order to higher-order needs is seen as the driving motivational force behind the complementary processes of institutional delegitimation and secular individualism (Lesthaeghe and Surkyn, 1988:1-45). While Lesthaeghe has uncritically incorporated Maslow's ideas into his writings, a closer look at Maslow's theory reveals serious shortcomings.

Maslow's theory (1954) holds that fundamental human needs translate into behavioral motivators, and can be organized in a hierarchy of "relative prepotency." Relative prepotency in Maslow's hierarchy means that once the lowest physiological needs such as food and shelter are satisfied, a person's needs and motives shift upward to safety and security. When a person feels safe and secure, social needs such as love and group belonging take precedence. With these social needs met, ego-related needs such as status recognition serve as more important motivators. Finally, when ego needs are realized, self-actualization needs emerge where a person is motivated by the need to achieve their fullest human potential.

In view of the fact that these needs are seen by Maslow as innate and irreducible, the satisfaction of needs at a lower level in his hierarchy does not permanently exclude these needs as motivators. A need is irrelevant as a motivator only as long as that need is satisfied. Thus, if social needs such as love, acceptance, or group belonging are not satisfied, these needs will remain or return as more relevant motivators than higher-order self-actualization needs. Similarly, if lower-order needs such as shelter and food are not being satisfied, these needs will become more important motivators than higher-order social needs.

Returning to Lesthaeghe's argument, he believes that the gains in relative affluence produced in capitalist industrial societies have brought about an historical shift from lower-order needs to higher-order needs in Western populations. According to Lesthaeghe, this upward moving "Maslowian escalator" of needs and motives is a major vehicle propelling individualism and secularism to the centre of modern culture. With lower-order needs satisfied by gains in affluence, the growing concern with self-actualization in developed societies is reinforced and legitimized by a secular individualist ideology.

Although Maslow's theory of a needs hierarchy fits with Lesthaeghe's decision-making model, Maslow's ideas fall short of providing a credible basis for historical and trans-cultural shifts in motivation and social institutions.

To begin with, many observers have developed thoughtful arguments that ego-related and self-actualizing needs can dominate a society without the satisfaction of Maslow's lower-order needs (Slater, 1976; Lasch, 1984; Ignatieff, 1984). In fact, several scholars claim that the emphasis in modern society on self-actualization needs can be basically incompatible or inconsistent with the realization of lower-order needs such as sociality or security (Braverman, 1974; Sennett, 1976; Lasch, 1979,1984; Bellah, 1985; Wolfe, 1989; Postman, 1992).

For example, in his most recent work <u>Technopoly: The Surrender of Culture to Technology</u> communications theorist Neil Postman (1992) develops the compelling argument that the "egocentrism" promoted by modern technology threatens to overwhelm communal values such as social cooperation and social responsibility. Similarly, historian Christopher Lasch (1984) asserts in his work <u>The Minimal Self</u> that the modern need for self-actualization is really a search for a technology of self-mastery that can compensate for the growing insecurity of social life in advanced captitalist societies.

Accepting the more general premise that levels of lower-order need satisfaction in modern society are hardly sufficient to justify their irrelevance as motivators, we must, nevertheless, determine why ego-related and self-actualization needs have become the preeminent motivators of modern social life.

A major reason why higher-order needs have become so important in the absence of lower-order need satisfaction, is that Maslow's theory of a needs hierarchy confounds biological needs with social and psychological needs. While research supports the notion that lower-order physiological and security needs are innate and organized hierarchically, studies in psychology show no hierarchical relationship between lower-order and higher-order needs (Westen, 1985:98-99). As well, several volumes of research in the social sciences demonstrate that social and psychological needs are heavily conditioned by socialization. These findings are consistent with both cognitive psychology theories and psychoanalytic theory which posit no necessary or sufficient relationship between the satisfaction of lower-order needs and the importance of higher-order needs as motivators (Westen, 1985: 97-101). Consequently, whatever relationship exists between rising affluence, declining institutional authority, and modern social-demographic change, the relationship cannot rest easily on deterministic notions that a "Maslowian escalator" of needs is responsible.

TOWARDS A SOCIOLOGICAL THEORY OF MODERN FAMILY FORMATION

The above critique of Lesthaeghe's thesis on secular individualism demonstrates that a complete theory of modern social demographic behavior, and especially the association between religion and the family, cannot be grounded in reductionist approaches. Rather, the foundation for a

sociological theory of contemporary social demographic behavior must be the complex interrelationship between individual social action and social structure.

Structuration theory, extensively developed in sociology through the writings of Anthony Giddens, has focussed on elaborating the relationship between individual agency and social structure. Accordingly, the theoretical framework developed in this study will draw extensively from and build upon many of Giddens' key concepts and propositions.

SOCIAL STRUCTURES AS EXPERT SYSTEMS OF INFORMATION

Giddens argues that the social structures constituting society can be understood as "expert systems" of information and knowledge . More directly, Giddens asserts that the routine generation and application of knowledge by expert systems organizes most of the social world. Therefore, the process of socioeconomic development can be viewed in terms of the steady proliferation and expansion of modern expert systems.

Universities offer the clearest illustration of how social institutions can be conceptualized as systems of expertise. Modern universities exist to routinely produce and disseminate "expert" knowledge that contributes to the organization of virtually all of social reality. Other prominent examples of modern expert systems would include state agencies such as Statistics Canada, the U.S. Central Intelligence Agency, and large multinational corporations.

formulating subsequent public policy, state expert systems

are reflexively organized.

Giddens draws attention to important and subtle links

between structural and individual reflexivity when he states:

> Nor is the reflexivity of official statistics
> confined to the sphere of the state. Anyone
> in a Western country who embarks upon marriage
> today, for instance, knows that divorce rates
> are high (and may also, however imperfectly
> or partially, know a great deal more about the
> demography of marriage and the family)...

Giddens continues:

> Awareness of levels of divorce, moreover, is
> normally much more than just consciousness of a
> brute fact. It is theorised by the lay agent in
> ways pervaded by sociological thinking. Thus
> virtually everyone contemplating marriage has some
> idea of how family institutions have been changing,
> changes in the relative social position and power
> of men and women, alterations in sexual mores,
> etc.--all of which enter into processes of further
> change which they reflexively inform. (Giddens,
> 1990:42-43).

As the above quote reveals, Giddens' does not view

reflexivity as something incidental to the existence of

individuals and social institutions. On the contrary, he

believes that modern society is "thoroughly constituted

through reflexively applied knowledge." Because of this

pervasive reflexivity, the proliferation of expert systems of

knowledge about social reality does not translate into either

social stability or greater certitude in social affairs.

As Giddens declares:

> The point is not that there is no stable social
> world to know, but that knowledge of that world
> contributes to its unstable and mutable character.
> The reflexivity of modernity, which is directly
> involved with the continual generating of
> systematic self-knowledge, does not stabilise the
> relation between expert knowledge and knowledge
> applied to lay actions. Knowledge claimed by expert
> observers (in some part, and in many varying ways)
> rejoins its subject matter, thus in principle, but
> also normally in practice altering it. (Giddens,
> 1990:45).

Conceptualizing modern social structure in terms of reflexively-organized expert systems is valuable as it clarifies the connections between structural change and individual change. In particular, this study will argue that the proliferation of modern expert systems has transformed society in three basic ways. First, the growth of expert systems has engendered a pluralist ideational culture and, therefore, a routine requirement for individuals to make personal choices. Second, the potential spatial and temporal context of social action has been tremendously enlarged by the mediating effects of modern expert systems. Hence, individuals are required to make decisions and choices regarding several possible contexts of social action. Third, basic perceptions of faith and continuity in the "reality" of the social world are undermined by the ideational and contextual pluralism engendered by expert systems. Indeed, the fantastic scope of change in society combines with reflexivity to impart a "virtual reality" quality to much of contemporary social life. Thus, developing and

maintaining "ontological security" in modern society becomes a task that individuals must routinely work at. Taken together, these three transformations support a non-recursive relationship between social structure and social action that simultaneously demands and legitimates radical individualism.

EXPERT SYSTEMS AND INDIVIDUALISM

The distinguishing feature of modern society is the steady profusion of expert systems of knowledge that organize social experience. According to Giddens, most pre-modern societies were characterized by only four major expert systems: religion, community, tradition, and kinship groups (Giddens, 1990:100-109). Modern societies not only retain these pre-modern expert systems--albeit in greatly modified form--but are organized by a growing number of systems of expertise including: state education and welfare systems, the natural and social sciences, great multinational corporations, mass communications media, the popular arts, and so on.

One major result of the proliferation of expert systems is ideational pluralism. The growth in modern expert systems, and commensurate explosion in the production and dissemination of social knowledge, offer strong competition to pre-modern expert systems such as religion, tradition, and kinship groups. Consequently, systems of expertise such as religion have been forced from a near monopoly position in pre-modern society into the pluralist ideational market of

modern society. Indeed, the historical process of secularization can be seen as the gradual supplanting of the expertise and authority of a few non-reflexive religious expert systems by numerous reflexively organized secular expert systems (Giddens, 1991:194-196).

The growth of numerous and often competing expert systems of social knowledge makes "uncertainty" and "doubt" common in the experience of modern individuals. Regularly faced with multiple and novel choices, individuals must routinely make choices if they are to maintain a coherent awareness of themselves and their social world. This imperative to make personal choices and to build our own understanding of self-identity and social reality is important for two reasons.

First, the requirement to actively choose ideas from a pluralistic society is consistent with Giddens view that individuals should be viewed as "knowledgeable agents" whose thinking and behavior is decisively influenced by their knowledge about the social world in which they act. And while Giddens believes that modern individuals can bring a "calculative attitude" to much of their social action, this does not mean that individuals employ the rational calculus depicted in most rational-choice theories (Giddens, 1991:70-88; 145-149). On the contrary, Giddens' structuration theory explicitly allows for social action that involves unconscious or unacknowledged motives as well as unforeseen consequences.

In these circumstances, individuals draw on their social knowledge to rationalize social action when required (Held and Thompson, 1989:58-61).

Second, the imperative to make ongoing choices in conditions of uncertainty legitimates individual reflexivity. Individual reflexivity involves the routine monitoring of self, others, and social phenomenon. The knowledge obtained through this monitoring serves as feedback for maintaining or transforming the self. Evidence of the widespread legitimacy of individual reflexivity can be seen in the enormous variety and popularity of self-improvement books, magazines, videos, programs, and procedures that cover every conceivable facet of human experience.

EXPERT SYSTEMS AS DISEMBEDDING MECHANISMS

The proliferation of expert systems that organize society has a profound impact on the actions of individuals. To grasp this relationship, the banal yet overlooked truth that all social action occurs in time and space must be stressed. All human thought and behavior is located and distributed in social time and in social space. In fact, a number of sociologists feel that the social spatio-temporal context is the most basic framework for human action and is, therefore, crucial to social theory (Gregory and Urry, 1985). Giddens recognizes this with his original insight that modern expert systems of knowledge operate as "disembedding mechanisms." (Giddens, 1990:21-29).

As disembedding mechanisms, expert systems mediate
human action and in the process "lift out" or displace these
social actions from their immediate, "local" contexts.
Put differently, expert systems disembed social action
by extending human experience and relationships outward
from their immediate social contexts (Giddens, 1990:20-29;
1991:18-23; 144-155). Immediate social contexts are
characterized by enduring, concrete and integrated spatial
and temporal features (Held and Thompson, 1989:60-62).
These features serve as objective referents that materially
define and constrain individual social action. Hence,
immediate contexts involve direct face-to-face social
relations and relatively nonmediated social actions. Most
important, nearly all social action in traditional societies
occurred in immediate contexts.

The disembedding effects of modern expert systems can be
better grasped with some examples. Television is one of the
most powerful disembedding mechanisms. Numerous theorists
have presented compelling cases that television is a medium
with an inherently limited capacity to contextualize the
enormous volume of social knowledge and information it
disseminates (Aldrich, 1975; Altheide, 1976; Postman, 1985).
Because of this, television viewing not only disembeds by
drawing our awareness away from our immediate social
environment for several hours a day, but disembeds at a more
subtle level by relentlessly denying the relevance of
immediate contexts as a basis for understanding social

reality. The latter type of disembedding is best reflected in network newscasts which purport to inform viewers of pivotal events around the globe with a daily 30 minute sequence of brief and discrete film and sound segments. As Neil Postman (1985) suggests, the absence of meaningful context in television degrades and trivializes public discourse in affluent societies.

Another example of the disembedding effects of expert systems can be found in Canadian agriculture. On the one hand, farming is social action that remains embedded in its traditional social milieu. Within this immediate context, enduring, concrete, spatio-temporal features such as life-long neighbors, stable communities, climate cycles, and rural geography continue to serve as meaningful external referents that materially define and constrain human action.

On the other hand, the proliferation of modern expert systems that mediate agriculture has transformed farming into an activity that is disembedded from its immediate context and extends far out in space and t ne. For most Canadian farmers abstract and remote referents such as: federal government marketing schemes; the Chicago commodity futures market; and international trade agreements such as the GATT; are as important as anything in their immediate social environment.

A commonplace example of expert system disembedding is the telephone. Modern telephone systems have tremendously enlarged the spatio-temporal context of social action

(Latham, 1983:41-54). Telephones allow us to instantly
enter social relations and share social experience with
other users located nearly anywhere on Earth. Furthermore,
the spectacular growth in modem technology, cellular
telephone systems and specialized telephone service options
has drastically eroded the meaning of immediate social
context for human activities. Recent telephone
advertisements showing important executives engaged in
business telephone calls while simultaneously driving down
busy highways, fishing on pristine lakes, or flying the
family away on vacation, underscore the loss in meaning of
immediate social contexts.

Gary Gumpert's analysis of modern mass communications
highlighted the disembedding--or what he refers to as the
"space adjusting"--effects of modern telephone systems:

> The concept of location, a definite place,
> as a component of a telephone call is no
> longer certain. The telephone call as a
> connection of sites, as a bridge between
> two places where two persons exist, is
> replaced conceptually by a connection
> of people whose space is irrelevant and
> perhaps private. (Gumpert, 1987:131-132).

In a discussion which has much in common with Giddens
understanding of how expert systems disembed social action,
social psychologist Kenneth Gergen (1991) details the ways in
which changes in communication and transportation systems
alter thinking and behavior. Specifically, he argues that
advances in computer technology, mass communications, and
transportation systems, free more of social life from the
exigencies of time and space.

At the same time, the sharp rise in the scope of social actions and relationships facilitated by these systems, have produced a what Gergen calls a "socially saturated" local environment that makes it increasingly difficult to maintain a coherent sense of self. In an argument that resonates with the premise of Berger et al. (1974) that the collapse of a stable external reality makes one's subjective reality seem more "real", Gergen contends that our sense of ourselves as socially bounded is being replaced by a sense that we are no longer bounded by reliable social criteria (Gergen, 1991:48-80).

The key point of this discussion is that as modern expert systems mediate and disembed social action, they propel social experience and relations away from immediate contexts and into multiple, abstract contexts. It follows that with the proliferation of expert systems, social action becomes more widely distributed in time and space--a process Giddens refers to as "time-space distanciation". This distanciation is echoed in the fact that social activity has become less dependent on others who are co-present in space and time. Rather than direct face-to-face social experience, mediated social action can be reflexively coordinated by people who are absent from each other's immediate social milieu. Indeed, the disembedding of social action serves as a stimulus for its reflexive reorganization across time and

space. In other words, the enduring presence of other people
in our immediate surroundings is becoming increasingly
superfluous to our social activities.

Previewing a major argument of this study, social
demographic processes in Western cultures are not immune from
the enormous changes brought about by modern expert systems.
On the contrary, the proliferation of modern expert systems
in the area of human reproduction has displaced or
disembedded this particular social action from its
traditional, immediate context of monogamous marriage.
Expert reproductive systems have made the socio-spatial
context of human childbearing and childrearing dramatically
larger and far more variable. This transformation in the
social context of reproduction has profound implications for
marriage and family formation.

EXPERT SYSTEMS AND ONTOLOGICAL SECURITY

The growth and development of expert systems has
added tremendous variation and pluralism to the ideational
and contextual referents of social action. Not surprisingly,
the psychological basis of social action has been altered as
well. In particular, Giddens focuses on how our sense of
"ontological security" has been drastically modified in
modern society.

Ontological security is the confidence individuals have
in the continuity and reliability of their own identity, the
identity of significant others, and in social reality.

Therefore, ontological security involves a "taken for granted" faith in the stability of external referents such as people and social objects (Giddens, 1990:92-99).

Drawing mainly from the theories of Erik Erikson, Harry Sullivan and D.W. Winnicott, Giddens asserts that ontological security has its roots in "basic trust." Basic_trust is built up during early childhood socialization as a result of the reliability and continuity in relations with adult caretakers in immediate social contexts. In other words, reliability in the adult caretaker/child relationship provides children with the necessary psychological footings for developing a strong sense of ontological security (Giddens, 1991:35-47).

Ontological security is vital because it contributes to our psychosocial capacity to enter and sustain inter-personal relationships. Confidence in the continuity and reliability of self, others, and in social contexts is crucial to effectively coping with relationships and experiences that are increasingly disembedded from immediate contexts.

Of special interest to this study is the chronic threat to ontological security posed by the growing ideational and spatio-temporal pluralism of modern society (Giddens, 1991: 35-54). Unlike pre-modern expert systems such as religion whose symbols and doctrines are characterized by continuity in space and time; the multiple, novel, and abstract

referents engendered by modern expert systems makes building ontological security a "perpetual task" for people today.

Similarly, basic trust emerges out of the immediate social context shared by children and their adult caretakers. Insofar as expert systems mediate and disembed this process, basic trust development will be impaired. The result is that "faith" in the reliability of self, others, and social reality is replaced by a trust that must be continuously validated through processes of mutual self-disclosure and reflexively organized self-awareness (Giddens, 1990:120-124; 1991:44-46;63-65).

Recent empirical research into Erikson's theory of ego-identity formation is consistent with Giddens' thinking. Specifically, research by Cote and Levine (1987;1989) indicates that both the time required for ego-identity formation, and the severity of the "identity crisis" in adolescence and early adulthood are increasing in modern societies. Significantly, exposure to the ideological pluralism of postsecondary education is deeply implicated in the extension of the process of self-identity formation.

Giddens believes that confidence or trust in self, others, and in our social environments is increasingly difficult to "take-for-granted" in modern society. Rather, ontological security becomes a psychosocial "task" that individuals must routinely work at to achieve. Individual reflexivity is crucially involved in this everyday task and becomes further reinforced and legitimized in society.

An obvious example of changes in the basis for ontological security and trust in relationships is the growing popularity of marital contracts. Ironically, as research by Turkle (1984) implied, we will increasingly depend on expert systems such as contract law to mediate our most intimate social relationships, because of the diminished "faith" we can have in a social reality that is thoroughly mediated by such expert systems.

SUMMARY

It is in the connections between the concepts of reflexivity, disembedding and time-space distanciation, that the clues for explaining the dynamism of modern society and modern family formation can be found. These three features combine to rapidly increase the areas of social life that are open to reflexive reorganization across social time and space. The systemic appropriation of knowledge by individuals and expert systems in a growing number of areas accounts for the unprecedented scope and pace of modern social change.

More important, these same three features combine to steadily enlarge the areas of social experience where the enduring presence of other people in one's immediate context becomes incidental to social action. In particular, the proliferation of expert systems of reproduction implies that the enduring presence of others--and the norms and values

associated with the enduring presence of others--are becoming
incidental to childbearing and childrearing. Accordingly,
an adequate sociological understanding of modern marriage and
family formation requires a fuller assessment of the impact
of modern systems of expertise in the area of human
reproduction.

CHAPTER II

FROM SECULAR TO REPRODUCTIVE INDIVIDUALISM

The requirement for individuals living in contemporary society to preserve ontological security in the face of ideational and contextual pluralism, is part of a larger need of modern individuals to create and maintain a coherent self. For Giddens, constituting a coherent self-identity in modern society amounts to a "reflexive project" that lasts a lifetime. Being reflexively organized, this personal project entails the regular monitoring of our own thought and behavior against a backdrop of multiple ideational and contextual choice. The information gleaned from this monitoring consciously and unconsciously informs subsequent choices, social action, and personal identity (Giddens, 1991:74-86)

While psychotherapy is perhaps the quintessential example of the reflexive creation of self and social action, this process is also crucial to the many groups involved with "consciousness raising" in society. The popular slogan of environmentalists to "think globally and act locally" can be viewed as an effort to inject environmental ideas and values into the reflexive organization of individual identity and social behavior.

Advertising offers many examples of how social action and personal identity are reflexively organized in modern society. Typical is a prominent advertising campaign by a

major Canadian life insurance company that contrasts images of the burdens of early adulthood with images of the "freedom" of early retirement at the age of fifty-five. In this case, consumers persuaded by this advertising campaign are organizing their self-identity and social action years or even decades into the future. Indeed, most forms of "lifestyle" advertising—common in automobile, alcohol, and luxury item advertisements—can be interpreted as efforts by marketers to integrate the consumption of their product with the reflexive creation of self among members of a target market.

As the task of building a coherent identity amounts to an ongoing lifelong task or "work in progress" for modern individuals, the motivation for social action shifts from external objective referents to internal subjective referents. Internal or subjective referents are social ideas that individuals have reflexively incorporated into their self. In large part, they represent the norms, roles, values and attitudes that are closely bound up with a person's sense of who they are.

By definition then, external referents are social ideas that are of secondary importance to the creation of a given individual's identity. External objective referents represent those social norms, roles, values and attitudes that are not integral to an individual's sense of who they are.

Secular individualism can be reconceptualized using the theoretical framework developed in this thesis. Modern expert systems mediate such a fantastic range of social choice and possibility, that external referents must be reflexively incorporated into self-identity if they are to decisively influence an individual's social action. In this way, human thought and behavior become increasingly internally or subjectively referenced over the course of modernization. Accordingly, the historical growth in secular individualism can be viewed in terms of a steady increase in the ratio of internally to externally referenced social action.

It must be emphasized that the rise of internally referenced social action does not imply that sociological and cultural variables lose their import. On the contrary, the proliferation and expansion of modern expert systems makes sociological phenomena more salient than ever. The effect of modern expert systems may be indirect and conditioned by the choices of knowledgeable human agents, but their necessary role in the construction of self-identity makes sociological and cultural factors crucial to a complete theory of social action.

In developing a more complete sociological theory of recent social demographic change, therefore, the focus must be on those expert systems that are most closely related to the specific social actions under study. A major argument of this study is that modern expert systems involving human

reproduction are profoundly related to recent trends in family formation. Specifically, the rise of reproductive individualism or internally referential reproduction, is believed to be deeply implicated in the dramatic rise in marital dissolution in Canada since the 1960's.

EXPERT SYSTEMS AND REPRODUCTIVE INDIVIDUALISM

While the historical trend towards secular individualism is one product of the proliferation of modern expert systems, the spectacular growth in recent decades in expert systems of human reproduction has created a variant with special relevance to modern family formation--reproductive individualism.

Reproductive individualism or internally referential reproduction is defined as childbearing and childrearing that primarily expresses the reflexive creation of individual identity. Implicit in this definition, is the idea that reproduction can be an emergent field of personal choice that is only secondarily influenced by external referents such as norms, customs and values concerning human reproduction.

Reproductive individualism can be contrasted with externally referential reproduction. Externally referential reproduction is childbearing and childrearing that primarily expresses adherence to external objective referents such as customs, norms, values, religious proscriptions, and biological constraints on reproduction. The legitimacy and meaning of external referents is largely "taken-for-granted"

by persons who are not reproductive individualists.
Consequently, childbearing and childrearing are socially
constituted actions and are incidental to the reflexive
organization of self.

A necessary condition for the growth of reproductive
individualism has been the rapid development of expert
systems in the sphere of human reproduction. To review an
earlier discussion, in mediating social action modern expert
systems operate as disembedding mechanisms. This means that
expert systems displace social experience and relations from
their immediate social contexts. Disembedding or
displacement occurs through greatly enlarging the spatio-
temporal distribution or social context of human behavior.
The result is mediated social action that occurs in multiple
and abstract social milieus that are disconnected from
immediate or traditional contexts.

The traditional and immediate social context for
human reproduction in Western culture has been heterosexual
intercourse within monogamous marriage. Prior to the
contraceptive revolution that began in the early 1960's,
reproduction and marital sexual intercourse were actions that
closely intersected in space and time. Indeed, for almost
all of human history, an unknown probability of conception
was intrinsic to the act of heterosexual intercourse.

With the proliferation of expert reproduction systems
during the past three decades all of this has changed. Few
areas of social action have been so thoroughly mediated by

the application of new knowledge and technology as human reproduction. Expert systems in reproduction can now mediate virtually every salient aspect of childbearing. Because of this, these expert systems have propelled reproduction away from its traditional context of marital intimacy.

The growth of modern contraceptive and abortion systems during the 1960's, rapidly transformed marital sexual intercourse and reproduction into social actions that are to an unprecedented degree contingently related in time and space. Knowledgeable individuals employing modern systems of contraception and/or abortion in developed societies can determine when, where, and with whom sexual intercourse and reproduction will closely intersect in time and space.

Similarly, the growing range of effective drug and surgical treatments that mediate subfecundity also contingently connect heterosexual intercourse with reproduction. In this case, however, drug and surgical treatments for subfecundity substantially increase the probability that heterosexual intercourse and reproduction will intersect in time and space. This increases the social distribution of reproduction by allowing individuals and couples to consciously defer childbearing well beyond the prime childbearing years.

The generation of modern expert reproduction systems that emerged since the 1970's including artificial insemination, in-vitro fertilization, cryopreservation,

intra-fallopian or ovum transfer, and surrogacy are "asexual" forms of reproduction that have quite literally "disembedded" human reproduction. With newer expert systems, reproduction has become an action whose spatio-temporal context is enormously large and variable and can have nothing to do with human intimacy.

Possibly the most dramatic illustration of the radical enlargement of the spatio-temporal context of reproduction is cryopreservation or embryo freezing. Cryopreservation has become a routine adjunct to both artificial insemination and in vitro fertilization. With existing cryoprotectants it is estimated that frozen embryos can remain in a viable state for somewhere between 600 and 10,000 years (Lieber, 1989). Thus, a modern individual or couple can potentially defer or extend their reproduction several centuries into the future.

Another example of the powerful disembedding effects of expert reproduction systems is artificial insemination, which currently contributes to an estimated 65,000 births each year in the United States alone (Office of Technology Assessment, 1988). With artificial insemination, reproduction can involve one or more known or anonymous sperm donors who may or may not be alive at the time of conception. Again, the advent of cryopreservation enables male gametes to be stored indefinitely and shipped around to various fertility clinics or sperm banks with ease (Edwards, 1991:353). While artificial insemination has been extremely successful in mediating male subfecundity in married couples, the powerful

disembedding effects of artificial insemination are becoming most evident in the demand for this procedure--known as the "turkey-baster baby method"--by single heterosexual and lesbian women (Eichler,1988: 252-256). For these women, the enduring co-presence of a husband-father in their immediate environment is incidental to childbearing and childrearing.

Combining any of these expert reproduction systems with surrogacy arrangements enormously increases the socio-spatial context of childbearing. This is reflected in the number of historical "firsts" in human reproduction witnessed during the past decade. One case in point is the 48 year old South African woman who gave birth to triplets in 1986. The event was made more extraordinary by virtue of the fact that the triplets were not her children but her grandchildren. The woman had served as a surrogate for her daughter and son-in law.

As the above example makes clear, expert systems have smashed through traditional and immediate spatial, temporal and social boundaries of reproduction by multiplying and redefining possible kinship categories almost exponentially. Hence, by combining artificial insemination with in vitro fertilization, a child can potentially have as many as four distinct parents. Combining these with surrogacy enables a child to have as many as eight parents-- some of whom may also double as grandparents (Edwards, 1991:356). As Eichler (1988) and Edwards (1991) suggest, the

manifold legal, ethical, and sociological issues raised by the disembedding of human reproduction will revolutionize the normative structure of marriage and the family.

In the past thirty years reproduction has been transformed into an action that for the first time in human experience is neither spatially nor conceptually bounded by the human body. Indeed, this conceptual boundary becomes ever more permeable as it moves farther away from the human body in order to accommodate the growing interventions of systems of reproductive expertise. In coming decades we can anticipate that expert systems involving genetic engineering and ectogenesis will thoroughly transform most aspects of human reproduction into abstract system-mediated "sites" characterized by multiple choices for prospective parents. The burgeoning salience of these reproductive choices implies that childbearing will increasingly come to express the reflexively-organized identity of parents. However, the apogee of reproductive individualism or of childbearing as an expression of the self, might be reached with the perfection of cloning technology.

The displacement of childbearing by modern expert reproduction systems is rapidly completing the more gradual displacement of childrearing from immediate familial contexts by other modern expert systems such as public education and childcare, family law, social welfare, and the social sciences (Lasch, 1977; Nett, 1988; Eichler, 1988).

The pervasive disembedding of human reproduction by modern expert systems is crucial to understanding recent changes in family formation in developed societies. For as childbearing and childrearing shift into multiple and mediated contexts, reproduction becomes less dependent on the enduring co-presence of others in time and space. From a different vantage, childbearing and childrearing are becoming so expert system-mediated that these actions no longer require the prolonged presence of other adults in one's immediate social environment. As sociologist John O'Neill (1985) puts it, reproduction of the human body is quickly becoming "defamilized" by modern social systems. To the extent that women wish to pursue a more prominent role in reproduction than men, the disembedding of reproduction means that the presence of a husband and father for the purpose of childbearing and childrearing becomes increasingly optional or discretionary. As previously mentioned, the exemplar of this transformation is the "single mothers by choice" groups that emerged throughout urban Canada and the United States during the 1980's.

The growing mediation of reproduction by modern expert systems has enabled women to reclaim control of their own bodies in fundamental ways. Of special interest is the overcoming of several biological givens and constraints regarding sexuality and reproduction. These achievements have transformed the female body from a "site" dominated by the exigencies of reproduction, into a "site" that is "more

immediately relevant" to the reflexive creation of self in women (Giddens, 1991:216-218).

In particular, with childbearing optionally linked to enduring heterosexual relations, both sexuality and reproduction become areas of new and expanding choice and meaning for men and especially for women. Giddens states:

> Reproduction clearly was never solely
> a matter of external determinism: in
> all pre-modern cultures various kinds of
> contraceptive methods, for example, have
> been used. Nonetheless, for the most part
> the sphere of reproduction belonged irremediably
> to the arena of fate. With the advent of more
> or less fail-safe methods of contraception,
> reflexive control over sexual practices and the
> introduction of reproductive technologies of
> various kinds, reproduction is now a field where a
> plurality of choices prevails. (Giddens, 1991:219).

New and expanding choices in the sphere of reproduction bring with them an inherent requirement for individuals to regularly make choices regarding sexuality and reproduction. As well, multiple choice inherently undermines the legitimacy of traditional sexual and reproductive norms, and challenges ontological security in the area of reproduction. This is exemplified on a nearly daily basis in the intense and rancorous debates and protests on the legal, ethical, and philosophical questions surrounding modern expert reproductive systems--especially abortion.

While the ability of women to reclaim control of their bodies is a precondition for reproductive individualism, the growing responsibility for individuals to make choices and decisions concerning reproduction is what has legitimized

reproductive individualism. To be sure, other modern expert systems of knowledge, notably the social sciences and feminism, have contributed in a major way to the spread of reproductive individualism. However, the disembedding of reproduction caused by expert reproductive systems would seem to be a necessary condition for the rise of internally referenced reproduction.

The expansion of reproduction into multiple and mediated social contexts, and commensurate increase in the salience of personal choices concerning reproduction, has rapidly eroded any broad social consensus concerning the normative basis for childbearing and childrearing. One revealing measure of this is the recent fate of the word "illegitimacy". This term long expressed a general consensus in many Western cultures that the normative basis for reproduction was monogamous heterosexual marriage. The rapid erosion in this consensus has made "illegitimacy" a socially incorrect label whose meaning is at best an arbitrary value judgement and quite possibly archaic. We should hardly be surprised at the fate of the word "illegitimacy" in view of the revolutionary disembedding effects of modern expert reproductive systems. As Edwards (1991) points out, the rapid proliferation of these systems makes heterosexual intercourse unnecessary to reproduction, and carries great potential for introducing systemic ambiguity into the consanguineal bonds of the family (Edwards, 1991:357).

As social and biological categories such as marriage,
kinship, age, heterosexual intercourse, and biological
infertility lose their capacity to constrain and define the
meaning of human reproduction, reproduction becomes tied more
and more to the internal subjective referents of individuals.
As a clear illustration of this transformation, even the
long-time biological "fate" of infecundity has become
something that a modern individual or couple must choose to
accept or reject in view of the burgeoning array of expert
systems available to mediate infecundity. Looked at in this
way, reproduction is joining the growing list of social
behaviors in contemporary cultures that both affirm and
express the reflexively-created self.

THE RELIGION AND FAMILY CONNECTION REVISITED

Whereas expert reproduction systems disembed
reproduction from its immediate marital context, a major
premise of this work is that religion operates in a reverse
way to embed or bind reproduction within traditional
marriage.

Researchers studying the connection between religiosity
and modern family formation have made some suggestive
discoveries. For instance, in their research into the
psychology of commitment, Abrahamson and Anderson (1984)
found that commitment patterns towards religion were quite
similar to commitment patterns towards family. As well,
Stack's (1985) study revealed that the integrating effects of

religion and the family were analytically indistinguishable. Indeed, he speculated that religion and family must have "some underlying dimension" in common. Finally, research by Thomas (1988) showed that religiosity was positively related to parental well-being even when marital well-being is held constant.

The "underlying dimension" shared by religion and the family which these studies allude to is consistent with the idea that religion operates as an embedding mechanism with respect to marital and family formation. Specifically, this thesis contends that religion consciously and perhaps unconsciously embeds reproduction within marriage.

RELIGION AND REPRODUCTION: UNCONSCIOUS EMBEDDING

One way that religion could embed reproduction in its traditional context is through unacknowledged or unconscious motives or processes. In this regard, Freud developed a major psychoanalytic theory of religion. Freud's concepts and ideas on the subject of religion and religiosity have been influential in sociology and especially in cultural anthropology (Bocock, 1983; Pandian, 1991). As well, social demographer Emmanuel Todd (1985) utilized major elements of Freud's theory of religion in his recent analysis of links between family structure and social systems.

Initially, Freud observed that religious ideas and morality played a dominant role in the thinking of many diagnosed neurotics. This clinical observation inspired a

lifelong interest in expounding a psychoanalytic explanation for religious belief and ritual.

To begin with, Freud maintained that unconscious wishes, desires, and fears are continually seeking access to our consciousness. Because of the socially disruptive or unacceptable nature of most unconscious impulses, psychic energy is continuously expended to repress or exclude these from consciousness. Moreover, the stronger an unconscious desire or fear is, the more psychic energy is expended to repress it from conscious awareness (Mullahy, 1948:9-16; Hall, 1979:22-57; Carroll, 1986:55-56). At the same time, Freud (1985) held that a compromise was available in the form of thought and action that allows for the symbolic or "disguised fulfillment" of forbidden wishes. He believed that what linked the obsessive thought and behavior of both neurotics and the devoutly religious was this compromise process of the symbolic fulfillment of unconscious needs (Freud, 1985:40-41).

In the end, the analogies and similarities Freud analyzed between neurotic obsession and religious devotion led him to conclude that religion was a "universal obsessional neurosis" that like all neuroses had its origins in the Oedipus complex (Freud, 1961:40-45). The proposition that religion can be understood as a social phenomenon that expresses and sustains unconscious Oedipal processes has informed numerous anthropological and sociological studies

of religion and religiosity (Roheim, 1950; Malinowski, 1955;
Dundes, 1962; Parsons, 1969; Spiro, 1979; Fox, 1980; Carroll,
1986). Most important, Oedipal dynamics and the Oedipus
complex continue to occupy a pivotal place in both
psychoanalytic theory and in clinical psychoanalytic practice
(Pollock and Ross, 1988). Therefore, attempting to discover
how religiosity might unconsciously embed reproduction within
marriage begins with unconscious Oedipal processes.

In order to grasp basic Oedipal dynamics it is
important to note that Freud considered a great many
pleasurable and nurturing activities as "sexual" activities
(Carroll, 1986:52). Because of this general definition of
sexual activity, Freudian psychoanalytic theory holds that
the first sexual attachment of both boys and girl is their
mother.

For boys the Oedipus complex simply involves an
intensification of the initial sexual attachment towards the
mother during those developmental stages where boys are
exploring their genital pleasure potential. The intensified
attachment to the mother gives rise to ambivalent and often
hostile feelings towards the same-sex parent. The male
Oedipus complex is resolved as sons experience "castration"
anxiety and guilt over their Oedipal desires. Essentially,
the repression of unconscious Oedipal dynamics in males is
completed through identification with the father (Freud,
1961; Kline, 1981:130-131).

Of special significance to this study, the female
Oedipal complex differs in important respects from the male
Oedipal process. Like boys, the first sexual attachment for
a girl is toward her mother. However, during the
developmental stages when the daughter is exploring her
genital pleasure potential, her sexual attachment shifts away
from the same-sex parent and intensifies towards the father.
For our purposes, the important manifestation of this change
in both the object and intensity of sexual attachment is the
daughter's Oedipal wish to supplant her mother-rival and
solidify her growing attachment to the father. Accordingly,
the daughter's Oedipal wish revolves around obtaining a child
from her father (Kline, 1981:130-132; Carroll, 1986:58-59).

There are two important things to note about the female
Oedipus complex. First, if unresolved the complex will--as
the daughter becomes more knowledgeable about reproduction--
translate into an unconscious desire for an incestuous
father-daughter marriage and family. Secondly, the female
Oedipal complex is less likely to be fully resolved than the
male Oedipal complex because of the absence of castration
anxiety in females (Kline, 1981:130-133; Tong, 1989:139-143).

As prominent psychoanalytic theorist Jacques Lacan
(1985) argues, the relatively greater difficulty women
have in completely resolving Oedipal issues and strongly
identifying with their fathers can have profound consequences
for female self-identity. In patriarchal societies, fathers

are not only objects of sexual attachment for daughters, but also symbolize the world of social roles and institutions that transcend the family. Consequently, identification with the father contributes materially to a child's ability to establish a sense of self outside of the family and within the larger society (Lacan, 1985; Tong, 1989:220-222).

Bringing together the above points, we can see how female religiosity could unconsciously embed reproduction within marriage by taping directly into unacceptable Oedipal wishes. First, religiosity sustains Oedipal dynamics in females by offering vicarious or symbolic fulfillment of these needs through ritual devotion to de-sexualized religious father-symbols. Second, by ritually sustaining Oedipal wishes, religiosity might also sustain the psychodynamic displacement of these unacceptable desires into socially acceptable form. An efficient displacement for highly religious women would be devotion to a father-substitute such as the husband in traditional families. Finally, strong commitment to traditional marital and reproductive norms by highly religious women would be especially likely insofar as ritual identification with religious father-figures compensates for identification with their human fathers. If Lacan's (1985) thesis is correct, intense female religiosity would constrain the acceptable expression of the female self to more traditional normative roles within marriage and the family.

Another means by which religiosity could unconsciously

embed reproduction within marriage is by sustaining relations of "basic trust" within the family. In addition to his Oedipal thesis, Freud also argued in his (1961) work The Future of an Illusion that religiosity could be motivated by an unconscious or unacknowledged need for reliable paternal protection and guidance. Specifically, Freud claimed that childhood memories of helplessness and fear persist within the unconscious mind and can give rise to a need in adults for the protection and guidance of a powerful and reliable parent. Religions can exploit and reinforce these fears and needs by offering up omnipotent and omnipresent father-symbols (Freud, 1961:18-33).

Given this connection between adult devotion to religious father-symbols, and unconscious needs for paternal protection and guidance, psychoanalytic theory would predict that highly religious parents are likely to project their own unconscious needs for basic trust relations towards their children. As Giddens implies, this process would result in a strong conscious commitment to familial roles among highly religious individuals (Giddens, 1990:103-104). To sum up, the religious adult's need for "basic trust" or reliable paternal protection and guidance, gives rise to a strong commitment to embedding childbearing and childrearing within its traditional, immediate social context of monogamous marriage.

While it is important to recognize the possible ways
that unacknowledged psychic mechanisms link religiosity
to traditional marital and family structures, it is more
important to clarify how religiosity might unconsciously
embed reproduction in its traditional social context.
Essentially, what the two psychoanalytic accounts of
religiosity share is a description of psychodynamic processes
that would support the value of traditional roles and norms
in reproduction. Thus, while expert reproductive systems
have made the enduring co-presence of husbands-fathers
and the normative basis for this presence increasingly
irrelevant for reproduction, pre-modern religion counters
this by reinforcing unconscious needs that make the enduring
co-presence of husbands-fathers indispensable to childbearing
and childrearing. When these unconscious embedding
mechanisms in religion are combined with conscious aspects
of religiosity, it is apparent that religious devotion is
generally incompatible with reproductive individualism.

RELIGION AND REPRODUCTION: CONSCIOUS EMBEDDING

Religion can be conceptualized as a pre-modern expert
system of knowledge and information. Grounded in sacred
historical texts and figures, religion is not nearly as open
to reflexive organization as modern expert systems (Giddens,
1990). The generally non-reflexive nature of religious
systems of knowledge generates conscious resistance to
reproductive individualism in the following way.

As a comparatively non-reflexive system of expertise,
religion provides stable and unverifiable ontological
referents that relieve believers of the individual
responsibility for building and preserving a sense of
ontological security. Clifford Gertz asserts that a defining
quality of religion is the provision of an ideational
foundation for social values whose veracity is not dependent
on empirical verification (Roberts, 1990:9-13). Instead, the
credibility of religious ontological referents is crucially
dependent on regular social interaction or "conversations "
with other believers (Berger, 1990). The intersubjective
validation of religious ideas and values makes the task of
building and maintaining ontological security a group
responsibility more than an individual responsibility.

Insofar as religiosity or regular social interaction
in religious settings is related to ontological security and
the veracity of religious referents for believers, the
manifest content and meaning of religious referents are
vitally important. In particular, to the extent that
religious referents manifestly bind sexual intimacy and
reproduction to its traditional context of monogamous
marriage, religiosity can be expected to measure conscious
motives that are generally inconsistent with reproductive
individualism.

Historically, Christianity has provided external
objective referents that unequivocally integrate or bind
reproduction, heterosexuality, and monogamous marriage.

For example, in the early Christian church heterosexual intercourse--even within the context of monogamous marriage--was a "venial sin" whose sole justification was childbearing. If there was no chance of procreation, heterosexual intercourse within marriage was elevated to a "mortal sin." The prominent Western father Augustine gave the following instructions, "marital pleasure is always a venial sin, and if procreation is not possible, as after menopause, it is a mortal sin. Therefore, a man should cherish his wife's soul but hate her body as an enemy" (Carmody, 1979:121-122). The overt misogyny in early Christian doctrines was eliminated by Protestant reformers who advised couples that moderate sexual activity within marriage was acceptable because procreation and childrearing was a path to salvation for women (Renzetti and Curran, 1989:274).

With few exceptions, Protestant churches have continued to champion the view that the only appropriate context for both sexual intercourse and reproduction is monogamous marriage. Only in the late 1980's have some Protestant denominations formally acknowledged the legitimacy of "committed nonmarital heterosexual relations." Moreover, the Episcopal Church in the United States and United Church in Canada have gone so far as to formally recognize committed nonmarital homosexual relationships (Renzetti and Curran, 1989:274-275). In view of the possible Oedipal dynamics involved in religious devotion, we should not be surprised

that these moves have triggered vociferous dissent in many congregations.

On the other hand, the Catholic Church continues to trumpet doctrines that firmly entrench reproduction within traditional marriage. The Catholic Church has long opposed divorce, abortion, and most forms of contraception. More recently, the Vatican openly denounced expert reproductive systems such as artificial insemination, and in vitro fertilization. Not unexpectedly, therefore, the Catholic Church's recent Congregation for the Doctrine of the Faith implicitly condemned reproductive individualism by affirming "the right of every person to be conceived and to be born within marriage and from marriage" (Renzetti and Curran, 1989:274-275).

Somewhat ironically, the external referents on reproduction put forward by the Catholic Church have much in common with the doctrines of fundamentalist or evangelical Protestant denominations. Most of these fundamentalist congregations vigorously denounce abortion, sex education, non-marital sexual intercourse, "permissive" childrearing practices, and divorce (Pohli, 1983). In short, the evangelical Protestant denominations explicitly condemn many of the multiple reproductive choices generated by modern expert systems.

Furthermore, these churches generally oppose gender equality and other "secular humanist" and feminist ideas. Instead, they assert that the most "spiritual" roles for

women are as nurturing mothers and deferential wives (Renzetti and Curran, 1989:279-280). As far as men are concerned, the ideal is for the husband to be the spiritual father of the family, yet defer to Christ as his spiritual "father" (McNamara, 1985:453-455). Finally, McNamara (1985) reports that many evangelical churches strive to entrench childrearing in the family through private Christian schools whose curricula and policies are directly shaped by parents.

Clearly the manifest content and conscious meaning of religiously based referents in most Christian denominations firmly embed reproduction within its traditional marital context. Given that religiosity is connected to both the veracity of religious referents and levels of ontological security for believers, religiosity would create significant conscious support for externally referenced reproduction and opposition to reproductive individualism. In other words, by openly attacking the legitimacy of the multiple choices and possibilities created by modern expert reproductive systems, religiosity limits the extent to which reproduction can express a reflexively-created identity. Indeed, religious devotion may be fundamentally incompatible with the idea that social behavior and the self should be reflexively organized.

FROM TRADITIONAL MARRIAGE TO THE PURE RELATIONSHIP

In his recent study Modernity and Self-Identity, Anthony Giddens develops an ideal type which he terms the "Pure Relationship". The purpose of this ideal type is to serve as standard for the comparative analysis of a variety of modern intimate relationships including marriage, common-law unions, homosexual unions, and even close friendships. Moreover, like all ideal types in sociology, Giddens' pure relationship does not correspond to any real social phenomenon. Rather, it is a composite abstraction that isolates and clarifies the most relevant and characteristic features of contemporary intimacy. As part of a theoretical and analytic strategy, the pure relationship is most useful as a standard from which to assess the salience of reproductive individualism for intimate social relationships.

Reviewing an earlier discussion, reproductive individualism refers to internally referenced childbearing and childrearing. Because of this, a parent who is a strong reproductive individualist views this action as something that primarily expresses the components of their reflexively created self. Other considerations that are external to the self such as social norms, customs or values concerning reproduction are of marginal interest to the reproductive individualist. Keeping this in mind, let us move on to outline the most important features of the pure relationship.

relationship is that the relationship is internally
referential or is an expression of the reflexive selves
of the partners. The pure relationship is not, therefore,
materially constituted by or anchored in social norms, roles,
values and institutions. Because of this feature, common-law
or consensual unions more closely approximate pure
relationships than formal marriages. This is especially
relevant because the thesis holds that reproductive
individualism is the motivational basis for childbearing
and childrearing that is most congruent with the pure
relationship.

It follows that questions Q201, Q205A, Q205B, Q206A, and
Q216 dealing with respondent views on non-marital sexual
unions and common law unions should be semantic extensions
of reproductive individualism. At an abstract level, items
Q201, Q205A, and Q206A are measuring the legitimacy of
common-law unions as socio-spatial "sites" for heterosexual
relations of substantial duration. With respect to Q206A,
the appropriateness of women entering non-marital sexual
unions of unknown duration is being measured. Assuming
respondent awareness of imperfect contraception, implicit
in the answers to these questions--and explicit in the case
of item Q216--is respondent tolerance for potential non-
marital reproduction. Accordingly, these questionnaire
items can be expected to echo respondent views toward
internally referential sexuality and reproduction.

all members of the pure relationship if it is to endure for

any significant duration (Giddens, 1991:88-98; 185-187).

To sum up, pure relationships are organized and

sustained primarily from within the relationship itself.

As a result of these features, the pure relationship is both

an extremely adaptable and potentially unstable structure.

Specifically, its permeable social boundaries and open-ended

requirements place great demands on the self-knowledge and

integrity of the partners and generate enormous potential for

distrust and dissatisfaction.

As well, the pure relationship is vulnerable to internal

tensions and contradictions--especially through the routine

incorporation of social information regarding the evaluation,

transformation, or dissolution of intimate relationships.

Above all else, since the pure relationship is internally

organized around the selves of adult partners, childbearing

and childrearing in pure relationships can be readily

perceived as externalities. Reproduction in pure

relationships is more likely to be seen as a "source of

inertial drag" on possible dissolution and an obstacle to

the ongoing project of self-actualization, rather

than as an anchoring or defining feature of the relationship

(Giddens, 1991:185-187).

To the extent that Giddens' ideal type captures the most

salient characteristics of modern intimate relationships a

serious issue emerges. What is the motivational basis for

childbearing and childrearing in pure relationships? Why do

individuals involved in the non-traditional marriages or common-law unions that approximate pure relationships have children at all? And what motivates unmarried heterosexual and lesbian women to become parents? The answer put forward in this thesis is reproductive individualism.

Reproductive individualism or internally referenced reproduction captures an attitudinal and motivational basis for childbearing and childrearing that is entirely consistent with the unique features of modern intimate relationships described by Giddens. Only if childbearing and childrearing can be harnessed to the reflexive project of the self can we expect reproduction to become a major part of pure relationships.

SUMMARY

The framework developed in this study clearly identifies reproductive individualism or internally referenced reproduction as a cause of divorce. To begin with, religiosity should be a significant proxy for reproductive individualism. Other things equal, highly religious persons will be more externally referential concerning child-bearing and childrearing. In contrast, highly secular persons will be more internally referential with respect to reproduction.

Likewise, reproductive individualism should also signal the extent to which intimate relationships approximate the ideal typical and inherently unstable "pure relationship" developed by Giddens. Again, we would expect individuals who

support more traditional styles of marriage to be externally referential concerning reproduction. On the other hand, those who favor intimate relations that approximate Giddens' pure relationship such as cohabitation should also be internally referential with respect to reproduction.

By elaborating on the theoretical connections between reproductive individualism, religious devotion, and the organization of modern intimate social relations, we can reconceptualize the strong empirical associations between religiosity, premarital cohabitation, and the risk of divorce. Essentially, much of this relationship should be explicable in terms of reproductive individualist attitudes. Those who embrace reproductive individualism will form marriages that are potentially less stable since their marriages are less anchored in external social criteria. On the other hand, those who eschew reproductive individualism will form marriages that are likely to be more stable since their marriages are strongly anchored in external social criteria. Put differently, reproductive individualism should account for much of the risk of experiencing marital dissolution because this concept measures belief in the legitimacy of both a socially bounded self and a socially bounded marriage.

The theory concerning marriage dissolution formulated in this thesis suggests three major hypotheses. These are:

(1) Reproductive individualism is directly related to the risk of marital dissolution in Canada. These two variables will vary in the same direction. High reproductive individualism will produce a high risk of dissolution and low reproductive individualism will produce a low risk of marital dissolution.

(2) Premarital cohabitation will be unrelated to the risk of marriage dissolution when reproductive individualism is controlled for. We would expect this if both cohabitation and marital dissolution are behavioral expressions of reproductive individualism.

(3) Religiosity will be unrelated to the risk of marriage dissolution when reproductive individualism is controlled for. Again, if both religiosity and marital dissolution are behavioral expressions of reproductive individualism, reproductive individualism will explain the empirical association between religiosity and divorce.

The process of testing the hypotheses derived from the theory developed in the first two chapters will comprise the remainder of the thesis. Chapter three describes much of the methodology designed to empirically test these hypotheses.

CHAPTER III

METHODOLOGY

This chapter describes the research methodology and strategy used to test the hypotheses derived from the theory contained in the first two chapters of the thesis. Chapter three begins with a summary of the data source used in the thesis. As well, this chapter has a detailed discussion of the process whereby the_independent_variable_of_reproductive individualism was operationalized.

THE_DATA_SET

The Canadian Fertility Survey was selected as a data set well suited to testing the hypotheses put forward in this thesis. The Canadian Fertility Survey was administered to a a large national probability sample during the period from April to June 1984. This cross-sectional, retrospective survey of 5,315 Canadian women between the ages of 18 and 49 collected a wealth of information relevant to reproduction (Balakrishnan, Krotki, and Lappierre-Adamcyk, 1984).

Using a comprehensive structured telephone interview schedule, the study compiled detailed data on respondent marital, pregnancy, and employment history; contraceptive practices; and important socioeconomic characteristics such as education and religion. Most important, the Canadian Fertility Survey included several questions that measured respondent attitudes towards intimate heterosexual relationships, new expert reproductive systems, and the social context of reproduction—objects of major

importance to the theory outlined in this thesis.

It is important to note that although the Canadian Fertility Survey collected a great deal of information relevant to reproduction, the survey was not intended to evaluate the theory developed in this thesis. Therefore, the remaining portions of the dissertation which describe the research methodology and statistical analysis amount to a secondary data analysis.

Secondary data analysis places enormous restrictions on how theoretically relevant variables can be measured and how hypothesized relationships between variables can be tested. Regarding the Canadian Fertility Survey, the major limitation was an absence of variables that could measure reflexivity as it pertains to self-awareness and personal identity--a crucial element of reproductive individualism. Nor was the measurement of the unconscious dynamics thought to be associated with religious devotion possible with this survey. On the other hand, the survey contained several attitudinal questions that appeared to be promising empirical indicators of reproductive individualism.

Another reason why the Canadian Fertility Survey was selected is that the Balakrishnan et al. (1987) model of marriage dissolution is based on this survey. Hence, using the same data set in this study would allow for meaningful model comparisons and would clarify the relationships among explanatory variables. Therefore, despite its limitations, secondary data analysis of Canadian Fertility Survey data was

seen as more than adequate for the theoretical and
exploratory focus of this study.

Finally, although the structured schedule used in the
survey was fairly lengthy, with each interview lasting an
average of 36 minutes, rates of interview termination and
question non-response by respondents were low. This
achievement is all the more remarkable because of the high
overall response rate. Of the 7,574 households contacted
with an eligible respondent, fully 5,315 or 70% completed
the telephone interviews (Balakrishnan, Krotki, and Lappierre
-Adamcyk,1984;1988; Canadian Fertility Survey, 1988).
In view of the fact that the sample was based on computer
generated random telephone numbers, the high levels of
participation by respondents means that the sample findings
can be generalized to the population of Canadian women with
considerable confidence.

EMPIRICAL INDICATORS OF REPRODUCTIVE INDIVIDUALISM

While confidence in the generalizability of the findings
from this thesis is based on the sound design of the Canadian
Fertility Survey, confidence in the validity of the findings
from the study crucially depend on measurement of the
independent variable of reproductive individualism.

Validity essentially refers to the correspondence
between theoretical formulations and empirical indicators.
An empirical or manifest indicator of some theoretical
concept is valid insofar as the indicator accurately
represents that concept. As Marradi (1983) puts it, a

valid indicator of a particular abstract concept is an indicator that falls within the "semantic domain" delineated by that concept. Accordingly, the process of developing valid measures remains one where theoretically informed yet ultimately subjective assessments of the face validity and social meaning of indicators is a necessary first step.

To begin with, the Canadian Fertility Survey included some 55 questions designed to capture attitudes on a wide range of topics involving marriage and the family. Of this total, 18 questions were initially chosen as promising measures of the independent variable on the basis of their logical, textual, and semantic correspondence with reproductive individualism. As Table 1 reveals, five of the questionnaire items (Q201, Q205A, Q205B, Q206A, Q216) measured respondent attitudes towards non-marital heterosexual unions. Another seven of the items (Q203C, Q203D, Q211, Q215A, Q217B, Q221, Q222) obtained respondent attitudes pertaining to the embeddedness of reproduction within marriage. Finally, six of the questions on the survey (Q223, Q224, Q228D, Q228E, Q228F, Q228G) explored sample attitudes on controversial expert reproductive systems.

RATIONALE FOR THE SELECTION OF EMPIRICAL INDICATORS

Reviewing the discussion at the close of the previous chapter, Giddens' "pure relationship" is an ideal type designed to serve as a standard from which to compare and analyze the burgeoning variety of modern intimate relationships. Recall that the key feature of a pure

relationship is that the relationship is internally
referential or is an expression of the reflexive selves
of the partners. The pure relationship is not, therefore,
materially constituted by or anchored in social norms, roles,
values and institutions. Because of this feature, common-law
or consensual unions more closely approximate pure
relationships than formal marriages. This is especially
relevant because the thesis holds that reproductive
individualism is the motivational basis for childbearing
and childrearing that is most congruent with the pure
relationship.

It follows that questions Q201, Q205A, Q205B, Q206A,and
Q216 dealing with respondent views on non-marital sexual
unions and common law unions should be semantic extensions
of reproductive individualism. At an abstract level, items
Q201, Q205A, and Q206A are measuring the legitimacy of
common-law unions as socio-spatial "sites" for heterosexual
relations of substantial duration. With respect to Q206A,
the appropriateness of women entering non-marital sexual
unions of unknown duration is being measured. Assuming
respondent awareness of imperfect contraception, implicit
in the answers to these questions--and explicit in the case
of item Q216--is respondent tolerance for potential non-
marital reproduction. Accordingly, these questionnaire
items can be expected to echo respondent views toward
internally referential sexuality and reproduction.

In a similar vein, questions Q203C, Q203D, Q211, Q215A, Q217B, Q221, and Q222 were identified as content valid indicators of the independent variable since all of these items integrate childbearing and childrearing with formal marriage. In particular, items Q203C and Q211 directly tap respondent views on the degree to which reproduction should be entrenched within marriage. Question Q215A measures the same object through gauging respondent approval of divorce when young children are involved. As an important aside, questionnaire items Q215B and Q215C could have been selected as face valid indicators of the reproductive individualism.

However, because the dependent variable in this study is marriage dissolution, Q215B and Q215C were excluded from the measurement of the independent variable in an effort to minimize any tautological relationship between reproductive individualism and marital dissolution.

Items Q203D and Q217B appeared to be semantic extensions of reproductive individualism by virtue of the fact that these questions dealt with the extent to which reproduction is both integrated within marriage, and is a binding force for the marital partners. This double meaning could explain why results from the preliminary factor analysis did not support the validity of these two variables and led to the subsequent deletion of Q203D and Q217B as indicators of the independent variable.

TABLE 1: SURVEY ITEMS MEASURING REPRODUCTIVE INDIVIDUALISM

VARIABLE   QUESTION
  NAME

Q201   In your opinion, when a man and woman decide to live together, it is
        very important, important, not very important or not at all important
        for them to get married?

Q203C   When two people decide to get married, is it absolutely necessary,
        fairly necessary or not necessary that they want to have children?

Q203D   When two people decide to get married, is it absolutely necessary,
  (1)   fairly necessary or not necessary that they feel the same way about
        wanting or not wanting to have children?

Q205A   Do you find that it is acceptable or not acceptable for a man and woman
        to decide to live together without marriage if they want to make sure that
        their future marriage will last?

Q205B   Do you find that it is acceptable or not acceptable for a man and woman
        to decide to live together without marriage if they are attracted to one
        another but do not want to make any long term commitments?

Q206A   In your opinion, is it acceptable for young women to have a sexual life
        before getting married?   [Yes/No Response]

Q211   When a couple decide to have children, do you think that it is necessary
        that they get married?   [Yes/No Response]

Q215A   Do you approve without reservation, approve with reservations or completely
        disapprove of divorce in the following circumstance...the couple have very
        young children?

Q216   Do you find it acceptable for a divorced woman to live with her children and
        a new partner without being married to him?   [Yes/No Response]

Q217B   On the whole, would you say that you strongly agree, agree, disagree, or strongly
  (2)   disagree with the following statement...having children tends to distance spouses
        from one another.

Q221   Do you find it acceptable for a woman to decide to have a child without a
        husband/partner in the house?   [Yes/No Response]

TABLE 1: SURVEY ITEMS MEASURING REPRODUCTIVE INDIVIDUALISM (CONTINUED)

VARIABLE   QUESTION
  NAME

Q222   Could you make such a decision to have a child without the presence
       of a husband/partner in the house?   [Yes/No Response]

Q223   Currently there is a lot of talk about artificial insemination:
       do you agree with this way of becoming pregnant?   [Yes/No Response]

Q224   There is also a lot of talk about couples who cannot have children
       and who ask another woman to bear a child for them in exchange for
       a sum of money. Do you strongly agree, agree, disagree, or strongly
       disagree with this?

Q228D Assuming abortion were legal, would you be for or against a woman
       having an abortion if there were good reasons to believe that the child
       would be physically or mentally handicapped?

Q228E Assuming abortion were legal, would you be for or against a woman
       having an abortion if the woman were not married?

Q228F Assuming abortion were legal, would you be for or against a woman having
       an abortion if the household does not have the financial means to support
       a child?

Q228G Assuming abortion were legal, would you be for or against a woman having
       an abortion if the woman wants an abortion for a reason she feels is valid?

NOTES

(1) Initial factor analysis indicated that variable Q203D was not a valid measure of
     reproductive individualism and this variable was dropped from subsequent analysis.

(2) Initial factor analysis indicated that variable Q217B was not a valid measure of
     reproductive individualism and this variable was dropped from subsequent analysis.

Questions Q221 and Q222 were also marked as face valid
indicators because of their unambiguous textual and semantic
affinity with the conceptual understanding of reproductive
individualism. These variables directly measure the extent
to which the respondent considers the enduring co-presence of
a husband-father as necessary for purposes of childbearing
and childrearing. As such, Q221 and Q222 may indirectly
measure the degree to which reproduction is an expression
of the self-identity of respondents rather than an expression
of traditional social norms and roles surrounding this
activity.

Finally, questionnaire items Q223, Q224, Q228D, Q228E,
Q228F and Q228G were selected as content valid indicators
because these questions deal with respondent views on
expert reproductive systems. It follows directly from the
theory developed in this thesis that attitudes on expert
reproductive systems are at a more abstract level attitudes
whose object is the socio-spatial and temporal organization
of reproduction. Accordingly, the series of abortion items
Q228D, Q228E, Q228F, and especially Q228G can be seen as
semantic extensions of reproductive individualism inasmuch as
these questions measure the degree to which respondents cede
control of the context of reproduction to individual women.
As was argued in the preceding chapter, individual choice
and control over the socio-spatial and temporal conditions of
childbearing and childrearing are defining features of
reproductive individualism.

Although abortion questions Q228A, Q228B, and Q228C dealt explicitly with expert reproductive systems, these items were not regarded as face valid indicators of the independent variable. This decision was made because these items produced strongly normative responses showing overwhelming approval in the sample for abortion in cases where the mother's life or health is in danger and in cases where rape is responsible for the pregnancy. Indeed, even major religious groups such as the National Council o Churches in the United States have approved of abortion under these circumstances. For these reasons, Q228A, Q228B, and Q228C were not considered to be semantic extensions of the concept under study.

On the other hand, questionnaire items Q223 and Q224 were flagged as promising indicators because they plumb respondent attitudes towards two relatively new and controversial expert reproductive systems--artificial insemination and surrogacy. The theory presented in this study holds that the unprecedented disembedding effects of newer expert reproductive systems have drastically enlarged the spatio-temporal organization of reproduction. This transformation has extended the social meaning of childbearing well beyond traditional social categories. Consequently, attitudes obtained through items Q223 and Q224 should capture respondent beliefs towards reproduction that are not primarily influenced by existing social norms, roles, values, and institutions.

MEASURING REPRODUCTIVE INDIVIDUALISM

Factor analysis is a powerful multivariate technique for determining which manifest or measured variables in a set form coherent subsets of latent, unmeasured variables. The major assumption of factor analysis is that these coherent subsets or factors represent meaningful abstract constructs that materially account for patterns of correlations existing within a larger set of measured variables (Rummel, 1967; McDonald, 1985; Tabachnick and Fidell, 1989). Hence, insofar as factors are interpretable as abstract concepts derived from social theory, factor analysis becomes a powerful tool for measuring theoretically relevant concepts. Accordingly, factor analysis of the face valid indicators was undertaken for the purpose of operationalizing the independent variable of reproductive individualism.

Whereas theory provides the rationale for identifying certain variables as semantic extensions of a particular concept, factor analysis provides statistical evidence for or against the presumed face validity of these variables. As a result, the statistical evidence generated by factor analysis can be used to refine the operationalization of an abstract concept by allowing statistically informed judgements to be made on the validity of manifest variables (Marradi, 1981:11-51).

It is vital to note that factor analysis does not extract factors that represent abstract concepts in any absolute sense. Instead factor analysis extracts factors

from the correlation patterns only in the manifest variables
selected for analysis (Marradi, 1981:17-20). Concretely,
this means that the statistical results of factor analysis do
not offer unequivocal tests of the validity of indicators.
Thus, empirical indicators with high factor loadings and
estimates of communality can only be judged as valid
indicators if their semantic content clearly overlaps with
the abstract concept being operationalized. Alternatively,
variables with low factor loadings and communality estimates
should be judged invalid and dropped from the set of
conceptual indicators (Marradi, 1981:20). This is so because
whatever the apparent face validity of variables with low
factor loadings and communalities, such variables are not
measuring the same abstract concept as face valid indicators
with high factor loadings and communality.

Another pertinent measurement issue involved the use of
common factor analysis with dichotomous variables. Most of
the 18 questionnaire items identified as face valid
indicators of the independent variable had dichotomous
responses. Over the years, concerns have been raised that
the low variances and highly skewd distributions common to
dichotomous or binary variables can distort common factor
analytic solutions (Susmilch and Johnson, 1975). However,
McDonald's (1985) study of factor analysis concluded that the
common factor analytic model is generally appropriate for the
analysis of dichotomous variables. At the same time,
McDonald cautioned that any factor solution involving

dichotomous variables can be expected to provide "adequate"
rather than the "best" linear estimates of the relationship
between empirical variables and factors (McDonald, 1985:198-
202).

With these facts on the utility of factor analysis as a
measurement tool in mind, preliminary factor analysis of the
18 initially chosen face valid indicators was undertaken in
an effort to adequately operationalize reproductive
individualism.

REFINING THE MEASUREMENT

A prelude to undertaking a fruitful factor analysis
is to evaluate the factorability of the correlation matrix.
Examination of the correlation matrix for the 18 initially
selected indicators shown in Appendix A revealed a matrix
that was factorable and could be expected to yield one or
more coherent factors.

To begin with, the value of the determinant of the
correlation matrix confirmed that the matrix was non-singular
and suggested that multicollinearity did not pose a threat
to factor analysis. As well, the numercus bivariate
correlations greater than .30 present in the matrix implied
that some common underlying or latent processes were
materially and simultaneously affecting several of the
manifest variables. Lastly, the Kaiser-Meyer-Olkin statistic
comparing the sum of squared correlation coefficients to the
sum of squared partial correlation coefficients between all
variables was fairly high with a value of .87542. The closer

the Kaiser-Meyer-Olkin value is to 1.0, the more likely it is
that observed variable correlations can be explained by fewer
unobserved variables. Therefore, the obtained value of
.87542 confirmed that the selected set of variables were
factorable (Norusis, 1988: 127-130; Tabachnick and Fidell,
1989:597-605).

The next stage in the measurement of the independent
variable was a preliminary factor analysis of the 18
initially selected indicators. Table 2 displays the
results of this analysis which used Principal Axis extraction
and the default settings of the SPSS-X Factor program. The
most important finding here was that the unrotated factor
matrix loadings or regression weights between each indicator
and the first factor extracted cast serious doubts on the
validity of items Q203D and Q217B.

Close examination of the correlation matrix and the
very low communality estimates for variables Q203D and
especially Q217B offered additional evidence that these
two variables were not valid measures of reproductive
individualism. Final communality estimates are the squared
multiple correlations of a particular variable with all
common factors. As such, variables with low communalities
share relatively little variance with other variables in the
set and any underlying common factors.

For these reasons, items Q203D and Q217B were dropped
from the set of empirical indicators measuring reproductive
individualism and excluded from all subsequent analyses.

TABLE 2: PRINCIPAL AXIS FACTOR ANALYSIS,
PRELIMINARY ANALYSIS WITH 18 VARIABLES.

Factor	Eigenvalue	Percent of Variance	Variable	Factor Loading(1)	Final Communality
1	4.76249	26.5	Q201	.63292	.49490
2	1.67111	9.3	Q203C	.32443	.37732
3	1.23521	6.9	Q203D	.13168	.09005
4	1.13929	6.3	Q205A	.57233	.50180
5	1.05067	5.8	Q205B	.57423	.43443
6	.99618	5.5	Q206A	.59374	.41854
7	.88533	4.9	Q211	.42327	.34176
8	.76338	4.2	Q215A	.43977	.24857
9	.74285	4.1	Q216	.55599	.35710
10	.66468	3.7	Q217B	-.03485	.01912
11	.64420	3.6	Q221	.58407	.62471
12	.60276	3.3	Q222	.40275	.43926
13	.57392	3.2	Q223	.34660	.27820
14	.52260	2.9	Q224	.36313	.24767
15	.47283	2.6	Q228D	.46606	.28538
16	.44692	2.5	Q228E	.56679	.64289
17	.44316	2.5	Q228F	.55671	.54978
18	.38243	2.1	Q228G	.62897	.55856

NOTES

(1) Loadings from unrotated factor matrix, first factor extracted through Principal Axis analysis using default values in the SPSS-X Factor program.

The revised correlation matrix consisting of the
16 remaining variables is depicted in Appendix B. Once again
the relevant tests of factorability provided ample reason
to believe that one or more underlying factors were
substantially and simultaneously affecting several
variables in the matrix. Indeed, visual examination of the
correlation matrix and the higher value of the Kaiser-Meyer-
Olkin statistic (.88026) verified that the deletion of
questions Q203D and Q217B had improved matrix factorability.

Preliminary factor analysis of the 16 variables (in
Table 3) remaining in the set confirmed the increased
factorability of the revised correlation matrix. Both the
unrotated factor loadings on the first factor extracted, and
the final communality estimates of the 16 indicators
furnished strong statistical evidence favoring the validity
of the remaining indicators. While no objective criteria
apply, the rule-of-thumb is that only variables with factor
loadings above .30 and communalities greater than .10 should
be interpreted in factor solutions (Tabachnick and Fidell,
1989:640). Moreover, Comrey (1973) classifies indicators
with factor loadings in excess of .45 as fair, and in excess
of .55 as good. On the basis of these criteria, all of the
16 remaining variables were judged to be useful and valid
empirical indicators of the independent variable.

With the validity of the indicators of reproductive individualism established, the next question to be addressed involved the dimensionality of reproductive individualism. Specifically, how many common factors or relevant dimensions are required to measure the independent variable in a comprehensive way. One of the most popular criteria for establishing the "lower bound" for the number of relevant factors is to interpret only factors with an eigenvalue greater than 1.0 (Kim and Mueller, 1983:43). Applying this criterion to the preliminary factor analysis for 18 variables suggested five relevant dimensions, while the preliminary results for 16 variables pointed to the interpretation of four factors. However, the eigenvalue greater than 1.0 rule has been severely criticized on the grounds that it overestimates the number of relevant factors in sample data, does not incorporate theoretical expectations, and is extremely sensitive to the number of variables selected for analysis (Zwick and Velicer, 1982).

A far superior method for ascertaining the number of salient common factors required for an optimal factor solution is the scree test. The scree test involves plotting eigenvalues against factors and is illustrated with the 16 valid indicators for the independent variable in Figure 1.

FIGURE 1: SCREE PLOT OF FACTORS MEASURING
REPRODUCTIVE INDIVIDUALISM (16 VARIABLES) (1)
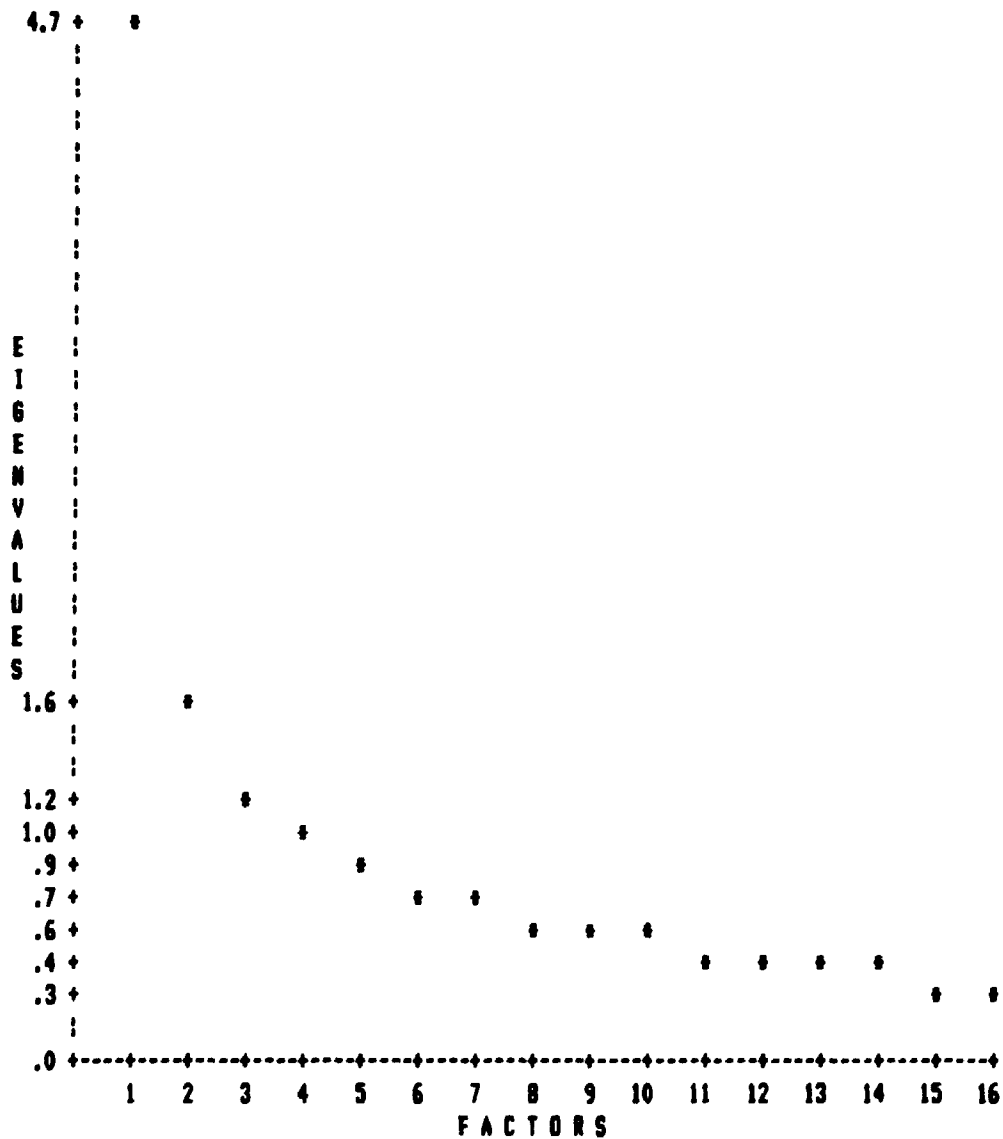
NOTES

(1) Variables 0203D and 0217D were deleted as measures of reproductive individualism
after preliminary Factor-analytic results revealed that these two variables had
very low communalities.

In scree testing, the point in the plot where a sharp
discontinuity or break in the eigenvalues occurs is what
helps the researcher to determine the number of relevant
factors in a solution. Specifically, the first eigenvalue
above the point where the plot begins to level out can be
taken as the last meaningful factor (Kim and Meuller, 1983;
Tabachnick and Fidell, 1989; MacIntyre, 1990).

Figure 1 plots the eigenvalues of the 16 valid
indicators of reproductive individualism and provided good
evidence that a maximum of two salient factors could
adequately operationalize the independent variable.

REPRODUCTIVE INDIVIDUALISM: A SINGLE FACTOR SOLUTION

The scree test results were consistent with but not
entirely congruent with theoretical expectations. Although
the theory outlined in this work does not preclude the
possibility that reproductive individualism is multi-
dimensional, the expectation was that reproductive
individualism w.s a unidimensional concept. Specifically,
theory supported the belief that a set of valid empirical
indicators could be found that were semantic extensions of
a single attitudinal dimension. After all, reproductive
individualism is a concept that should subsume attitudes
whose shared abstract object is the spatio-temporal
context of human reproduction.

Toward this end, what Marradi (1981) calls "explanatory" factor analysis or factor analysis guided by theoretical expectations (Marradi, 1981) was pursued using SPSS-X Factor. Table 4 summarizes the results of several analyses which specified two factor solutions and oblique rotation in order to assess the adequacy of a two factor solution.

Unlike orthogonal rotation which simplifies factor interpretation by mathematically positioning factors so that they are uncorrelated with other factors, oblique rotation allows underlying factors to correlate and provides information on the degree of correlation existing between factors   This was important because if two unmeasured factors correlate highly in the "semantic space" defined by the variables in the correlation matrix, these factors are for all practical purposes measuring the same abstract concept (Marradi, 1981). Furthermore, if two factors are essentially measuring the same abstract concept, than imposing a single factor solution is statistically justified.

While the widely-used Principal Axis factor analysis with oblique rotation was the a priori choice for executing the explanatory factor analysis, several extraction methods were employed in order to assess the consistency of the Principal Axis solution. As Table 4 shows, the factor patterns were generally consistent and robust across several extraction methods. Questions pertaining to expert reproductive systems loaded highly on factor two while the remaining set of empirical indicators loaded on factor one.

Only Alpha extraction yielded minor discrepancies in the overall factor patterns with items Q215A and Q203C loading on factor two rather than factor one. This discrepancy likely resulted from the Alpha algorithm which estimates communalities so that the reliability of each factor is maximized. With a factorable correlation matrix, reliability will generally increase if factor patterns are symmetrical.

Most important, with the extent of factor obliqueness moderately constrained by the delta value in SPSS-X Factor, the two factors proved to be moderately related with absolute correlations ranging from a low of .66 using Principal Axis extraction to .74 with Image extraction. Subsequent factor analyses (not shown) with Principal Axis extraction and higher delta values verified that the two factors were essentially measuring the same concept by showing strong absolute factor correlations in excess of .80. Combined with the theoretical expectation that the independent variable was unidimensional, the results of the explanatory factor analysis provided solid evidence for believing that reproductive individualism could be effectively operationalized with a single factor solution.

Table 5 summarizes the results of explanatory Principal Axis factor analysis with a one factor solution imposed. Both the factor loadings from the factor pattern matrix and final communality estimates revealed that a single factor

TABLE 4: FACTOR PATTERNS OF VARIOUS FACTOR EXTRACTION METHODS, DIRECT OBLIMIN ROTATION WITH DELTA AT DECIMAL FIVE (0.5).

Principal Axis

Variable	Factor 1	Factor 2
0201	.65304	-.02069
0205B	.62091	.01428
0221	.61759	.03168
0216	.60561	.00557
0211	.60274	.16734
0205A	.59008	-.00679
0206A	.57610	-.06339
0222	.53900	.13972
0215A	.29842	-.17924
0223	.19257	-.17689
0228E	-.29827	-.96615
0228F	-.20499	-.85423
0228G	-.03991	-.75776
0228D	.05922	-.46784
0224	.14384	-.25064
0203C	.12548	-.20842

Factor Correlation = -.66837

Image

Variable	Factor 1	Factor 2
0221	.57275	.03420
0201	.56682	-.04025
0205B	.55859	.00333
0211	.54640	.14334
0205A	.54242	-.00687
0216	.53232	-.01040
0222	.52611	.15046
0206A	.51490	-.06488
0215A	.26623	-.16505
0223	.17680	-.15607
0228E	-.23176	-.81123
0228F	-.18152	-.75786
0228G	-.04371	-.68391
0228D	.03528	-.44561
0224	.12576	-.23172
0203C	.10574	-.19794

Factor Correlation = -.74908

Maximum Likelihood

Variable	Factor 1	Factor 2
0201	.66642	-.00301
0205B	.65309	.04392
0205A	.64225	.04407
0216	.62308	.02745
0206A	.60861	-.02607
0211	.59645	.15892
0221	.57950	.01254
0222	.51067	.12137
9215A	.30652	-.15703
0223	.21282	-.13959
0228E	-.30895	-.98512
0228F	-.21428	-.87217
0228G	-.03753	-.75952
0228D	.08014	-.44985
0224	.14860	-.23287
0203C	.12621	-.20132

Factor Correlation = -.68200

Alpha

Variable	Factor 1	Factor 2
0211	.66475	-.23217
0221	.65822	-.02422
0201	.63169	.05347
0205B	.58176	.01866
0216	.56695	.03776
0222	.55025	-.13375
0205A	.51401	.07571
0206A	.50457	.14382
0228E	-.29947	.89700
0228F	-.20069	.78286
0228G	-.04794	.70508
0228D	.02040	.46713
0224	.03414	.39434
0223	.06731	.33827
0215A	.20079	.32109
0203C	.06549	.27782

Factor Correlation = .68350

and provide a more convincing test of the thesis proposal that prior attitudes materially contribute to the risk of subsequent divorce, it was felt that the independent variable be initially categorized using parameters selected from the subset of once-married respondents who had not experienced a divorce at the time of the survey. While this strategy cannot resolve the issue of causal direction, it can support the theoretical assumption insofar as attitude levels found within intact first marriages are linked to marital dissolution.

Figure 3 illustrates the distribution of factor scores for the 2,561 respondents who were still in their first marriage at the survey date, and had responded to all 16 questions used to measure reproductive individualism. Again the distribution of factor scores in the sub-sample revealed a modest negative skew and was generally congruent with the key features of a normally distributed variable.

The final task in operationalizing reproductive individualism for testing using hazard modelling with categorical variables, was to transform reproductive individualism from a continuous to an ordinal measure. For the sub-sample of respondents who had never experienced the dependent variable, approximately 22% obtained factor scores more than 1 standard deviation below the mean. Another 25% of the valid cases scored better than 1 standard deviation above the mean. The remainder of the cases were within 1 standard deviation of the mean

TABLE 5: SINGLE FACTOR STRUCTURE OF
REPRODUCTIVE INDIVIDUALISM, PRINCIPAL AXIS EXTRACTION.

Variable	Factor Loadings	Communality	Factor Score Coefficients (1)
Q201	.63282	.40047	.18345
Q228G	.61039	.37257	.16908
Q206A	.60165	.36199	.16389
Q205B	.57162	.32675	.14756
Q216	.56562	.31992	.14455
Q205A	.56305	.31703	.14328
Q221	.55244	.30520	.13819
Q228F	.52974	.28063	.12798
Q228E	.52748	.27824	.12702
Q228D	.46743	.21849	.10395
Q215A	.44449	.19757	.09627
Q211	.41570	.17281	.08734
Q222	.38250	.14630	.07787
Q224	.36009	.12966	.07191
Q223	.34190	.11689	.06729
Q203C	.30492	.09298	.05843

Eigenvalue = 4.03748

Variance in correlation matrix explained by Single Factor = 25.2%

NOTES

(1) Factor Score Coefficients calculated using the Regression Method in SPSS-X Factor.

solution provided the basis for valid and economical measurement of the independent variable. Finally, the Cronbach's alpha coefficient of .81 calculated by SPSS-X Reliability verified that the 16 valid indicators could be summed to form a reasonably reliable attitudinal scale (Carmines and Zeller, 1981:43-48; Rossi, et. al., 1983:252-255).

REPRODUCTIVE INDIVIDUALISM: CONTINUOUS AND ORDINAL SCALING

One of the most powerful statistics generated from factor analysis are the factor score coefficients shown on Table 5. Analogous to beta coefficients in a regression equation, factor score coefficients are obtained by regressing a factor on its empirical indicators. As a result, these coefficients represent "weights" that assign the unique contribution made by each indicator to the measurement of a factor. Most important, the coefficient-weighted sum of scores on a set of empirical indicators produce a continuous factor score for each respondent that estimates the score that the respondent would have obtained had the factor been measured directly (Marradi, 1981:21-26; Tabachnick and Fidell, 1989:640-642).

From a methodological standpoint, the great value of factor scores is that they combine to provide a reliable, valid, and continuous measurement of the theoretical concept represented by the factor. Moreover, the sample distribution of factor scores provides statistical criteria for categorizing the abstract concept of interest. Figure 2

depicts the sample distribution of factor scores measuring the concept of reproductive individualism.

As can be seen in Figure 2, the sample distribution of factor scores generally conforms with the qualities of the normal or Gaussian curve. Both the slight negative skewness of-.258 and kurtosis of-.789 suggest that the use of dichotomous variables as indicators did not substantially distort the measurement of reproductive individualism. Although the normality of the sample distribution for the independent variable highlighted the efficacy of factor analysis as a measurement tool, additional methodological considerations dictated that data from only a subset of the sample be used to categorize the independent variable for use in proportional hazards analysis.

Recall that the theory to be tested holds that differential adherence to reproductive individualism is what places people at differential risk of marital dissolution. Yet it is legitimate to argue the reverse and to assert that reproductive individualism could be engendered by the experience of divorce. To make matters worse, the Canadian Fertility Survey retrospectively secured data on the dependent variable of marital dissolution but measured attitudes at the time the survey was executed. In order to partially address the issue of causal direction

FIGURE 2: FREQUENCY HISTOGRAM OF FACTOR SCORES FOR ENTIRE SAMPLE,
NORMAL CURVE SUPERIMPOSED ON FREQUENCY HISTOGRAM (1).


```
Count
106      -1.9   ++++++.+++++++
                 :       .
157      -1.7   ++++++++.+++++++++++
                 :         .
150      -1.5   +++++++++++.+++++++
                 :          .
150      -1.3   +++++++++++++++.++
                 :            .
153      -1.1   +++++++++++++++++++    .
                 :               .
194       -.9   +++++++++++++++++++++++    .
                 :                 .
226       -.7   +++++++++++++++++++++++++++    .
                 :                   .
242       -.5   +++++++++++++++++++++++++++++    .
                 :                     .
295   M   -.3   +++++++++++++++++++++++++++++++++++    .
      I          :                        .
305   D   -.1   +++++++++++++++++++++++++++++++++++++    .
      P          :                          .
364   O    .1   +++++++++++++++++++++++++++++++++++++++++++.
      I          :                           .
331   N    .3   ++++++++++++++++++++++++++++++++++++++++    .
      T          :                          .
325        .5   +++++++++++++++++++++++++++++++++++++++.+
                 :                        .
305        .7   ++++++++++++++++++++++++++++++++++++.++++
                 :                     .
298        .9   +++++++++++++++++++++++++++++++++.++++++++
                 :                   .
234       1.1   ++++++++++++++++++++++++.++++++
                 :                 .
204       1.3   ++++++++++++++++++.+++++++++
                 :               .
136       1.5   ++++++++++++++.+++++
                 :            .
72        1.7   ++++++++.+
                 :      .
  5       1.9   ++    .
                +----+----+----+----+----+----+----+----+----+----+
4,252           0    80   160   240   320   400
                            FREQUENCY
```
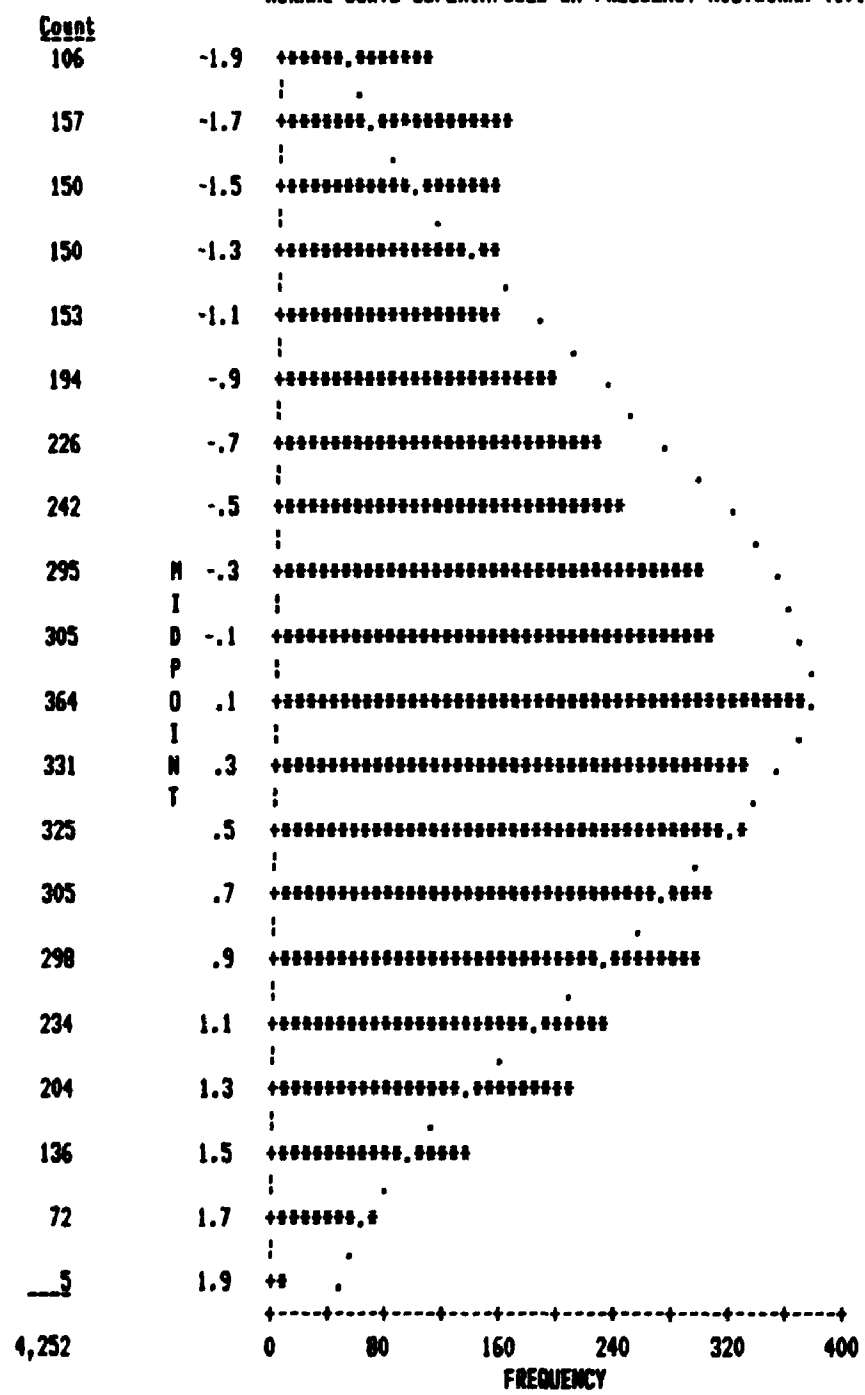
Mean = .000
S.D. = .923   NOTES
Skewness = -.258   (1) One symbol (+) equals approximately 8 cases;
                          Valid cases = 4,252; Missing cases = 1063.

FIGURE 3: FREQUENCY HISTOGRAM OF FACTOR SCORES FOR SUB-SAMPLE OF CASES WITH INTACT FIRST MARRIAGES, NORMAL CURVE SUPERIMPOSED ON FREQUENCY HISTOGRAM (1).

```
Count
  81    -1.9  +++++++++.++++++++++
                          .
 137    -1.7  +++++++++++++.+++++++++++++++++++++
                         .
 123    -1.5  ++++++++++++++++++.++++++++++
                        .
 113    -1.3  +++++++++++++++++++++++++.+++
                           .
 112    -1.1  ++++++++++++++++++++++++++++++       .
                                .
 147     -.9  +++++++++++++++++++++++++++++++++++++++      .
                                   .
 144     -.7  ++++++++++++++++++++++++++++++++++++++        .
                                       .
 167     -.5  +++++++++++++++++++++++++++++++++++++++++++       .
                                          .
 193  M  -.3  ++++++++++++++++++++++++++++++++++++++++++++++++++      .
      I                                          .
 202  D  -.1  ++++++++++++++++++++++++++++++++++++++++++++++++++++       .
      P                                              .
 207  O   .1  ++++++++++++++++++++++++++++++++++++++++++++++++++++++++ ,
      I                                                  .
 186  N   .3  ++++++++++++++++++++++++++++++++++++++++++++++++++ .
      T                                       .
 162      .5  ++++++++++++++++++++++++++++++++++++++++++++.
                                            .
 170      .7  +++++++++++++++++++++++++++++++++++.+++++++++
                                     .
 144      .9  +++++++++++++++++++++++++++++.++++++++
                                  .
 107     1.1  ++++++++++++++++++.+++++++
                            .
  84     1.3  ++++++++++++++.++++++
                        .
  58     1.5  +++++++++.+++++
                      .
  24     1.7  ++++++.
                    .
   0     1.9  +  .
              +----+----+----+----+----+----+----+----+----+----+
2,561         0    80   160  240  320  400
                          FREQUENCY
```
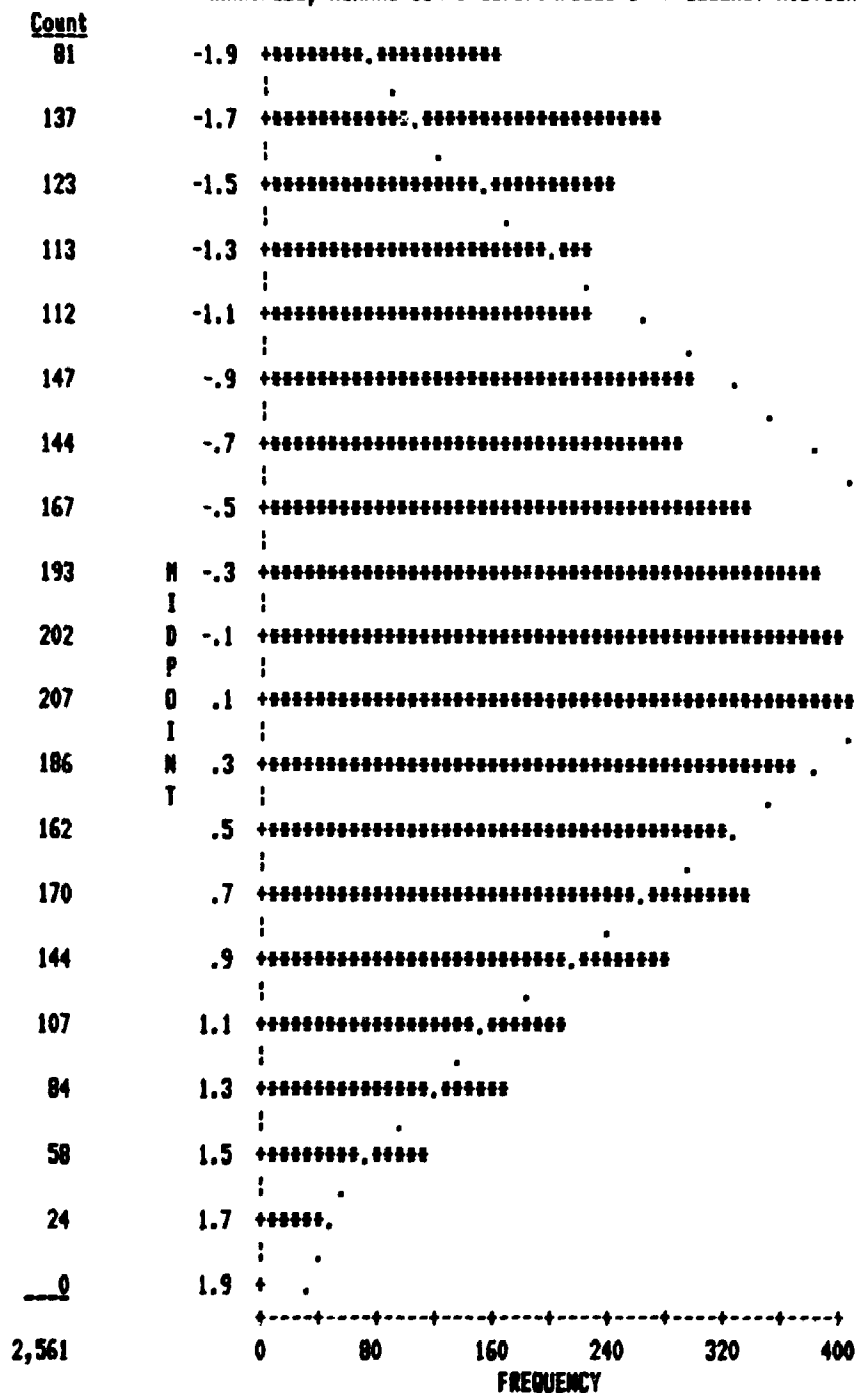
Mean = -.187
S.D. = .922
Skewness = -.087

NOTES

(1) One symbol (+) equals approximately 4 cases;
     Valid cases = 2,561; Missing cases = 676.

and provide a more convincing test of the thesis proposal
that prior attitudes materially contribute to the risk of
subsequent divorce, it was felt that the independent variable
be initially categorized using parameters selected from the
subset of once-married respondents who had not experienced a
divorce at the time of the survey. While this strategy
cannot resolve the issue of causal direction, it can support
the theoretical assumption insofar as attitude levels found
within intact first marriages are linked to marital
dissolution.

Figure 3 illustrates the distribution of factor scores
for the 2,561 respondents who were still in their first
marriage at the survey date, and had responded to all 16
questions used to measure reproductive individualism. Again
the distribution of factor scores in the sub-sample revealed
a modest negative skew and was generally congruent with the
key features of a normally distributed variable.

The final task in operationalizing reproductive
individualism for testing using hazard modelling
with categorical variables, was to transform reproductive
individualism from a continuous to an ordinal measure.
For the sub-sample of respondents who had never
experienced the dependent variable, approximately 22%
obtained factor scores more than 1 standard deviation
below the mean. Another 25% of the valid cases scored better
than 1 standard deviation above the mean. The remainder
of the cases were within 1 standard deviation of the mean

reproductive individualism score. These distribution parameters obtained from respondents in intact first marriages were used to recode the measurement of the independent variable into three categories of low, high and moderate reproductive individualism respectively. With this transformation completed, reproductive individualism could be included as either a continuous or categorical variable in hazards models of divorce.

The next chapter traces the process of testing the hypotheses generated in this thesis using powerful techniques of survival analysis known as hazards models.

CHAPTER IV

MODELLING REPRODUCTIVE INDIVIDUALISM AND DIVORCE

In recent years a powerful set of statistical tools in the field of survival analysis have been developed that are especially useful for modelling the occurrence and timing of events. For the purposes of survival analysis, events are defined as transitions over time from one discrete state to another discrete state. The event or state transition of most interest in survival analysis has typically been the transition from life to death. However the tools of survival analysis can be fruitfully applied to investigate various types of state transitions or events. The event that serves as the dependent variable in this study is the experience of a first marriage dissolution. More precisely, since the focus here is in the social causes of marriage dissolution rather than legal divorce per se, the dependent variable was deemed to have occurred if once-married respondents reported being either separated or divorced at the time of the survey. While this definition of the dependent variable fails to account for separated couples who might eventually reconcile, it was assumed that the overestimate of marriage dissolution would be immaterial.

Whenever detailed information on social behavior over time is obtained through retrospective studies such as the Canadian Fertility Survey, techniques from survival analysis that fall under the rubric of "hazards models" are especially useful for examining the occurrence and timing of events with

reference to various possible explanatory or independent variables. Because of this, hazard model analysis was used to evaluate how various theoretically relevant variables—especially the independent variable of reproductive individualism—affect the occurrence and timing of marriage breakdown in Canada.

KEY CONCEPTS IN SURVIVAL ANALYSIS

There are two fundamental functions that are vital to understanding survival analysis. First, the survivor function describes the probability of a person remaining in a discrete state beyond a given time interval. This probability is 1.00 when a person initially enters a particular state and drops towards 0.00 as time passes. To illustrate, when a person signs the marriage certificate at their wedding the probability of their remaining married for at least a few more moments is 1.00 or very close to 1.00. As time goes by, however, the probability of that person remaining married declines and eventually approaches zero as divorce or death become imminent. With sample data, the survival probability for most events or dependent variables of interest rarely approaches zero because of censoring. Censoring is the incomplete event history data collected from sample respondents that is the inevitable result of finishing a particular survey or study.

Second and most important is the hazard function. The hazard function describes the probability of a person experiencing an event or state transition during a given

time interval, conditional on the person surviving to at least the beginning of that time interval. Put differently, the hazard function measures the distribution of the risk of experiencing an event such as divorce over time (Morita, Lee and Mowday, 1989:282-284; Singer and Willet,1991:268-271). For example, the risk or hazard of experiencing a divorce may be high in the first few years and gradually decline over time.

As Singer and Willet (1991) note, the basic logic of survival analysis is to use these two functions to identify situations in which the probability of a state transition such as divorce changes across time. Of special interest are situations where groups of respcndents differ on the values of explanatory variables that might explain and predict the risk of marital breakdown.

HAZARDS MODELS

In part because of its ability to efficiently handle censored cases using maximum likelihood estimation techniques, hazards modelling has become a preferred method of survival analysis (Teachman, 1982; Allison, 1984; Hutchison, 1988). Yet the greatest scientific utility of hazards modelling stems from the fact that the hazard or risk of state transition measured in these models is a log-linear function of the multiple continuous or categorical variables included in a particular model. Accordingly, hazards modelling is at least as powerful and versatile as ordinary

multiple regression techniques in the testing and building of social scientific theory.

THREE APPROACHES TO HAZARDS MODEL ANALYSIS

Three methods of estimating hazard models with the BMDP-2L statistical software program were employed to test the hypotheses: the Cox regression method, the Exponential regression method, and the Weibull regression method.

The first hazards analysis used in developing model 1 through model 5 (Table 8 through Table 12) was the Cox regression approach. What distinguishes this method of estimation is that it makes no assumptions about the distribution or shape of the underlying risk or hazard of experiencing a divorce across time. Instead, the underlying hazard for experiencing an event is arbitrarily defined as the hazard that exists when all explanatory or independent variables included in a model take the value of zero at any time (t) (Teachman, 1982; Hutchison, 1988).

Thus, the Cox regression approach is most useful in evaluating the relative impact of several explanatory variables on the dependent variable regardless of the shape of the underlying hazard distribution. As Equation 1 shows, what is revealed by the Cox hazard model is the extent to which explanatory variables amplify or diminish an underlying risk of divorce that is determined by the variables included in the model.

$$h(t;z) = ho(t)exp(Bz) \qquad\qquad (1)$$

With respect to the terms in equation 1, **h(t;z)** is the hazard function at time **(t)** for covariate vector **z**, **ho(t)** is an arbitrary underlying hazard at time **(t)** when the covariate vector **z = 0**, and **B** represents a vector of regression-like coefficients measuring the effect of the model's explanatory variables on the underlying risk of divorce.

While the Cox regression approach is extremely flexible, and yields valuable information on the relative effects of explanatory and independent variables, by ignoring the underlying hazard distribution for a particular event the Cox regression approach cannot account for duration dependence.

Essentially, duration dependence refers to the fact that the time one spends in a state such as marriage can be an important predictor of a transition to another state such as divorce. Alternatively, duration dependence can be a proxy for explanatory variables not included in a particular model. In short, duration dependence exists when the hazard or risk of experiencing an event changes as a consequence of the duration one spends in a particular state. As Teachman (1991) notes, there is every reason to suspect that most social phenomena are to some extent duration dependent, and that failure to model duration dependence can lead to biased results. Because of the possibility that the transition from first marriage to first divorce involves

duration dependence, two parametric approaches to estimating
hazards models were also undertaken to develop model 6 and
model 7 (shown in Table 13 and Table 14).

Unlike the Cox regression approach, which arbitrarily
defines an underlying hazard on the basis of those variables
included in a model, both the Exponential and Weibull
regression methods assume that the underlying hazard
or risk distribution follows a specific functional form.
Measuring deviations from this functional form while
controlling for the effects of explanatory variables allows
duration dependence in the dependent variable to be tested
and analyzed.

To begin with, the Exponential approach generates a
model that incorporates the strong assumption that the
underlying hazard is constant and, therefore, not dependent
on time spent in a state. As equation 2 below indicates,
with the value of p fixed at a value of 1.0 and h
representing the underlying risk distribution, the
Exponential regression method produces estimates that assume
a constant underlying risk ho(t) at any point in time.

$$ho(t) = hp(ht)^{p-1} \qquad (2)$$

By itself, the Exponential regression procedure is
too restrictive to produce accurate estimates of event or
divorce risk. As a result, one of the great benefits of
using this parametric method is that it generates a model
that serves as a standard from which we can compare a

subsequent Weibull model that explicitly allows for duration dependence. Through comparing the relative fit of the Exponential and Weibull models to he data, we can isolate the salience of duration dependence in explaining the occurrence of the dependent variable.

The Weibull regression approach to estimating hazards models (Equation 3) allows for a wide variety of linear and non-linear changes in the underlying risk or hazard of state transition over time. This is shown in Equation 3 where h(t) is the hazard function at time (t),

$$h(t) = hp(ht)^{p-1} exp(Bx) \quad\quad (3)$$

and , h is the underlying hazard when the vector of regression coefficients is zero, and p is the 'shape" parameter measuring duration dependency or the change in the underlying hazard h over time. Finally, B is a vector of regression coefficients which measure the impact of each explanatory variable on the underlying hazard, while x represents the vector of explanatory variables used in the model.

Exponential and Weibull hazards models shown in Table 13 and Table 14 respectively, were constructed so that duration dependency could be evaluated as part of the hypotheses testing process.

EXPLANATORY VARIABLES IN THE HAZARDS MODELS
=====

Table 6 lists the categorical explanatory variables
that were used in the hazard models of marriage dissolution.
For comparative purposes, the operational definitions used to
specify the dummy covariates generally followed those used by
Balakrishnan et al. in their 1987 study of divorce in Canada.

Most of the categories coded for use in the hazards
models are self-evident, however, some need further
clarification. First, a birth within the first 7 months of
first marriage was categorized as a premarital conception.
Second, once-married women whose first union was reported as
cohabitation were deemed to have cohabited before their
first marriage, while those once-married women who stated
marriage as their first union were defined as not cohabiting
prior to their first marriage. Third, once-married survey
respondents who attended church monthly or a few times a year
were classified as "sometimes" attenders on the behavioral
indicator of religiosity.

TABLE 6: CATEGORICAL VARIABLES USED IN
HAZARD MODELS OF MARITAL DISSOLUTION (1).

Explanatory Variables	Category	N (2)	%
Age at first marriage:	- 19 years of age or younger..........	1,116	29.5%
	- 20 to 21 years of age(3)............	1,097	29.0%
	- 22 to 24 years of age...............	1,008	26.6%
	- 25 years of age or older...........	561	14.8%
Year of first marriage:	- married prior to 1965...............	812	21.4%
	- married between 1965 and 1974(3)....	1,519	40.1%
	- married between 1975 and 1984.......	1,458	38.5%
Premarital cohabitation (3):	- cohabited prior to 1st marriage.....	709	18.7%
	- no cohabitation.....................	3,082	81.3%
Religiosity (frequency of church attendance)(4):	- weekly of more......................	1,122	29.6%
	- sometimes(3)........................	1,462	38.6%
	- rarely or never.....................	1,202	31.7%
First birth status:	- Premarital first birth..............	266	7.0%
	- Premarital conception...............	351	9.3%
	- No conception.......................	3,174	83.7%
Place of residence(4):	- Large urban(3)......................	2,301	60.7%
	- Small urban.........................	1,178	31.1%
	- Rural...............................	308	8.1%
Reproductive individualism(4) (5):	- Low individualism...................	573	20.0%
	- Moderate individualism(3)...........	1,668	58.3%
	- High individualism.................	620	21.6%

NOTES

(1) Models 1 through 3 include categorical variables only while models 4 through 7 contain categorical and continuous explanatory variables.

(2) Respondents restricted to those who have had one marriage only.

(3) Denotes reference category for dummy coded categorical variables.

(4) Indicates a variable measured at the time of the survey.

(5) Parameters demarcating low, moderate and high reproductive individualism were obtained from a sub-sample of respondents who were still first married. Respondents with reproductive individualism factor scores beyond these parameters were designated as missing cases.

Although the specification of all of the explanatory
variables to be used in the model was based on once-
married respondents who were either married, separated
or divorced at the time of the survey, the categorization
of the independent variable of reproductive individualism was
further restricted by using standards derived from
the sub-sample of respondents whose first marriages were
still intact at the time of the survey. As discussed earlier
in Chapter 3, reproductive individualism was categorized on
the basis of single standard deviations above and below the
mean for the factor scale measuring the independent variable.
Specifically, respondents with factor scores at least one
standard deviation above the mean were categorized as
displaying "high" reproductive individualism, while those
with factor scores at least one standard deviation below the
mean were categorized as having "low" reproductive
individualism. The reference category of "moderate"
reproductive individualism included all cases falling within
one standard deviation of the mean of the factor scale
measuring the independent variable. Cases with factor
scores beyond the distribution set by respondents who
had never experienced the dependent variable were classified
as missing and excluded from the hazards modelling.
While we cannot resolve the issue of causal direction using
this strategy, it does allow us to determine if attitude

levels found within intact marriages are related to the risk of marriage dissolution.

In addition to the categorical definitions listed in Table 6, reproductive individualism, age at marriage, year of marriage, and years of education were entered as continuous variables in several of the hazard models of divorce. Descriptive statistics for these explanatory variables measured as continuous covariates are displayed in Table 7.

Finally, with respect to the timing and occurrence of the dependent variable, a marital separation was regarded as the crucial event signaling marriage breakdown. Consequently, even for those respondents who were divorced at the time of the survey, the date of marital separation rather than the date of legal divorce determined the occurrence and timing of marriage dissolution. As was noted earlier, while this definition of the dependent variable may introduce a slight bias due to the fact that some couples reconcile after separation, it was assumed that the bias would be immaterial.

TABLE 7: CONTINUOUS COVARIATES USED IN
HAZARD MODELS OF MARITAL DISSOLUTION (1).

Explanatory Variables	N	Mean	Standard Deviation	Standard Error	Minimum [Maximum]
Year of First Marriage:	3,789	1971	7.810	.127	1950 [1984]
Age at First Marriage:	3,782	21.8	3.318	.054	13 [41]
Years of Education:	3,790	12.3	2.895	.047	0 [30]
Reproductive Individualism(2):	2,862 (3)	-1.0	9.287	.174	-19 [18]

NOTES

(1) Continuous explanatory variables were entered in hazard
model 4 (reproductive individualism), model 5 (all),
model 6 (all), and model 7 (all).

(2) After transformation of continuous single factor scores to assist in
hazard coefficient interpretation. Factor scores were transformed by
multiplying the scores by a constant 10 and rounding to the nearest
integer.

(3) The comparatively high number of missing cases for reproductive
individualism (missing cases = 929) is due to: (a) listwise deletion
of cases in the factor analysis program resulted in the inclusion
of only cases with complete data on all 16 indicators of reproductive
individualism, and (b) the deletion of cases with factor scores that
exceeded the distribution of factor scores of once-married + still
married respondents.

REPRODUCTIVE INDIVIDUALISM AND THE RISK OF DIVORCE

The point of departure in testing the hypotheses developed in this inquiry is model 1 depicted in Table 8. Model 1 essentially replicates the substantive findings from Balakrishnan's et al. (1987) study of marital dissolution using the Canadian Fertility Survey. All of the significant categorical variables in the 1987 study were again found to be significantly related to divorce in the expected direction.

However, differences in sample selection criteria and variable specification yielded slightly fewer valid cases, and generally greater beta coefficients in the replication than were found in Balakrishnan's earlier analysis. The greater beta coefficients are reflected in the significantly (chi-square > .001) lower log-likelihood value for model 1 when compared to Balakrishnan's model.

The significantly lower log-likelihood value in model 1 tells us that the risk estimates in model 1 have superior explanatory power, and fit the data better than the beta coefficients in Balakrishnan's study (Allison, 1984: 420-21). Practically, it was concluded that although model 1 does not exactly replicate the earlier analysis, model 1 does provide a solid empirical baseline from which to investigate the issues raised in this thesis.

TABLE 8: COX HAZARD MODEL FOR MARITAL DISSOLUTION WITH CATEGORICAL COVARIATES, MODEL 1 (1).

Variable (2)	Category	Beta (B) Coefficient	Standard Error	Exponent (B) 1992 / 1987 (3)
Age at marriage: [20 - 21 years]	- 19 years or less	.1996	.1122	1.2209 / 1.376
	- 22 to 24 years	-.2565 *	.1307	.7738 / .674
	- 25 years or older	-.7129 ***	.1931	.4902 / .435
Year of marriage: [1965 to 1974]	- prior to 1965	-1.0355 ***	.1422	.3551 / .473
	- 1975 or after	.7471 ***	.1317	2.1109 / 1.592
Cohabitation before first marriage: [No cohabitation]	- Cohabited	.2824 *	.1322	1.3263 / 1.495
First birth status: [No conception before marriage]	- Premarital birth	1.0355 ***	.1403	2.7522 / 2.349
	- Premarital conception	.5680 ***	.1362	1.7647 / 1.495
Place of residence: [Large urban]	- Small urban	-.7336 ***	.1141	.4802 / .665
	- Rural	-1.4405 ***	.2836	.2368 / .335
Religiosity: [Sometimes]	- Weekly or more	-.4974 ***	.1464	.6081 / .610
	- Rarely or never	.7072 ***	.1037	2.0283 / 1.836

Log Likelihood = -3380.8039
Chi-Square = 438.26 ***
Degrees of Freedom = 12
Valid Cases = 3692   Missing Cases = 99
Divorces = 473   Censored Cases = 3219

NOTES

(1) This model includes the statistically significant covariates of marital dissolution found in Balakrishnan's et al. (1987) study.

(2) Reference category in brackets [   ].

(3) Exponentiated hazard coefficients reported in model 2 of Balakrishnan et al. (1987).

(* p= .05   ** p= .01   *** p= .001)

Table 8 verifies that t-tests for the beta coefficients for the explanatory variables in model 1 are significantly different from zero at the .05 level of more. With dummy or categorical variables, exponentiating the beta coefficient gives the comparative or relative risk of divorce across categories net of all other variables in the model. Thus, an exponentiated beta greater than 1.0 points to a higher risk than the reference category, while an exponentiated beta less than 1.0 implies a lower risk than the reference group.

To illustrate, the exponent (B) of 1.32 for the "cohabited" category reveals that women who cohabited prior to their first marriage have a 32% greater risk of divorce at any time in their marriage or marital duration—measured by months in this study—than women who did not cohabit before their first marriage.

Likewise, with regard to the variable of religiosity, the coefficient for the dummy variable "weekly attendance" is -.4974, which yields exp(-.4974)=.6081. This indicates that the risk of divorce for women who attend church at least once a week is only 60% of the risk of divorce facing women in the reference group who attend church sometimes. In sharp contrast, the coefficient of .7072 for women in the "rarely of never" religiosity category gives these non-churchgoers a relative risk of exp(.7072) = 2.0283, or twice the risk of divorce experienced by "sometimes" attenders, and three times the divorce risk of weekly churchgoers.

As a final illustration, both a premarital birth and a premarital conception are very strong predictors of marital breakdown. Women who have a child before first marriage have a exp(1.0355) = 2.75 relative risk which translates into a 175% greater hazard of divorce than the women who belong to the reference category. Similarly, thrse who become pregnant before marriage run about a 75% higher risk of dissolution throughout their marriage than those women who do not conceive prior to their first marriage net of the effects of all other variables in the model.

To summarize the key findings from model 1, premarital cohabitation and religiosity are categorical variables that are significantly associated with the dependent variable of divorce. Of course, this interesting empirical finding begs the more salient sociological question of exactly what is it about cohabiting before marriage and attending church services that influences the risk of marital breakdown. The remainder of this chapter will strive to answer this crucial question in terms of the concept of reproductive individualism.

Table 9 depicts the results of a Cox hazards model analysis when the independent variable of reproductive individualism is entered as a categorical covariate of marriage dissolution.

As expected, reproductive individualism is a strong and highly significant predictor of marriage dissolution when all other covariates are controlled for. Net of other

TABLE 9: COX HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL COVARIATES, MODEL 2 (1).

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism	- low individualism	-1.1178 ***	.2535	.3270
[moderate individualism]	- high individualism	.5664 ***	.1173	1.7618
Age at marriage:	- 19 years or less	.2038	.1278	1.2261
[20 - 21 years]	- 22 to 24 years	-.2579	.1497	.7727
	- 25 years or older	-.6316 **	.2172	.5318
Year of marriage:	- prior to 1965	-.9643 ***	.1675	.3813
[1965 to 1974]	- 1975 or after	.8525 ***	.1481	2.3455
Cohabitation before first marriage: [No cohabitation]	- Cohabited	.0332	.1509	1.0338
First birth status:	- Premarital birth	1.0551 ***	.1578	2.8723
[No conception before marriage]	- Premarital conception	.6127 ***	.1619	1.8454
Place of residence:	- Small urban	-.6353 ***	.1320	.5298
[Large urban]	- Rural	-1.4576 ***	.3409	.2328
Religiosity:	- Weekly or more	-.4290 *	.1805	.6512
[Sometimes]	- Rarely or never	.5710 ***	.1193	1.7701

Log Likelihood = -2455.0912
Chi-Square = 436.53 ***
Degrees of Freedom = 14
Valid Cases = 2790   Missing Cases = 1001
Divorces = 365   Censored Cases = 2425

NOTES

(1) Reproductive individualism added to model as a categorical covariate of marital dissolution.

(* p= .05   ** p= .01   *** p= .001)

explanatory variables in the model, women who scored low on the reproductive individualism factor scale have a relative risk of divorce that is only about 30 percent, exp(-1.1178) =.3270, of the hazard facing those women who are moderate reproductive individualists. Indeed, only one other covariate in model 2--currently living in a rural residence-- has a lower risk estimate for divorce than women who eschew reproductive individualism.

Conversely, high reproductive individualists have around a 75 percent higher hazard of divorcing during any given month of their marriage than women in the reference category. Further, high reproductive individualists have better than 5 times the risk of divorce of low reproductive individualists throughout their marriages.

Moreover, the much lower log-likelihood statistic for model 2 when compared with model 1 is statistically significant on the basis of the chi-square test. This confirms that the inclusion of the attitudinal covariate of reproductive individualism has materially improved the predictive power and fit of the model. Combined with the substantial beta coefficient values for reproductive individualism, the lower log likelihood in model 2 offer compelling support for hypothesis (1).

Second, the addition of reproductive individualism as an explanatory variable in model 2 has rendered the relationship between premarital cohabitation and first marital dissolution statistically insignificant. When the

effects of the other variables in the model ar controlled for, premarital cohabitation no longer predicts divorce as it did in model 1. Since the only explanatory variable added to model 2 is reproductive individualism, it follows that high reproductive individualism explains or accounts for the differential risk of divorce between cohabitors and non-cohabitors observed in model 1.

To reiterate, the significantly greater risk of divorce documented among premarital cohabitors in model 1 appears to be entirely explicable in terms of unmeasured selectivity in this group with respect to the independent variable. Thus, when high reproductive individualism is added in model 2, th' selectivity among cohabitors on this attitudinal variable is empirically captured and cohabitors run the same risk of divorce as non-cohabitors.

It is apparent that the findings from hazard model 2 are consistent with hypothesis (2). On the evidence, it is fair to conclude that cohabitors are more likely to exit marriage for the same reason they cohabited before entering marriage--their strong reproductive individualism. The mere fact of cohabiting before a marriage is irrelevant to the subsequent stability of a marriage.

In accordance with model 2, Table 10 displays the Cox regression estimates when cohabitation before first marriage is excluded from analysis. The most noteworthy aspect of model 3 is that the log-likelihood statistic, which gauges the fit of the model with the sample data, remains

TABLE 10: COX HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL COVARIATES, MODEL 3 (1).

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism	- low individualism	-1.1193 ***	.2534	.3265
[moderate individualism]	- high individualism	.5703 ***	.1159	1.7687
Age at marriage:	- 19 years or less	.2045	.1277	1.2270
[20 - 21 years]	- 22 to 24 years	-.2533	.1482	.7763
	- 25 years or older	-.6265 **	.2160	.5345
Year of marriage:	- prior to 1965	-.9662 ***	.1672	.3805
[1965 to 1974]	- 1975 or after	.8593 ***	.1447	2.3615
First birth status:	- Premarital birth	1.0610 ***	.1555	2.8894
[No conception before marriage]	- Premarital conception	.6153 ***	.1615	1.8503
Place of residence:	- Small urban	-.6355 ***	.1320	.5297
[Large urban]	- Rural	-1.4565 ***	.3409	.2330
Religiosity:	- Weekly or more	-.4297 *	.1805	.6507
[Sometimes]	- Rarely or never	.5720 ***	.1192	1.7718

Log Likelihood = -2455.1153
Chi-Square = 435.91 ***
Degrees of Freedom = 13
Valid Cases = 2790   Missing Cases = 1001
Divorces = 365   Censored Cases = 2425

NOTES

(1) Premarital cohabitation was dropped because this variable proved to
be a statistically insignificant predictor of divorce when reproductive
individualism was added to the model.

(* p= .05   ** p= .01   *** p= .001)

virtually unchanged from model 2. This confirmed that reproductive individualism had accounted for the higher risk of dissolution previously attributed to cohabitation.

Because the factor scale for reproductive individualism offers a continuous measure of this concept, it was decided that entering reproductive individualism as a continuous rather than categorical covariate would further clarify its relationship with marital dissolution. The Cox model in Table 11 enters reproductive individualism as a continuous rather than a categorical explanatory variable.

Since there is no longer a competing or reference risk category for reproductive individualism when it is entered as a continuous covariate, the interpretation of the highly significant beta coefficient for reproductive individualism is different from the remaining categorical variables in model 4. Specifically, the beta coefficient for a continuous covariate estimates the multiplicative effect of the variable with reference to time rather than an arbitrarily selected category (Allison, 1984:26-28).

In an effort to facilitate the interpretation of the risk coefficient for reproductive individualism in model 4, the factor scores for reproductive individualism were multiplied by a constant of 10 and rounded to the nearest integer. This yielded a distribution of integer values measuring reproductive individualism that ranged from -19 to +18 with a median of zero. With this in mind, the

**TABLE 11: COX HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL AND CONTINUOUS COVARIATES, MODEL 4 (1).**

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism: [Continuous covariate]	(N.A.)	.0629 ###	.0072	1.0649
Age at marriage: [20 - 21 years]	- 19 years of less	.2119	.1281	1.2360
	- 22 to 24 years	-.2663	.1475	.7662
	- 25 years of older	-.6191 ##	.2161	.5385
Year of marriage: [1965 to 1974]	- prior to 1965	-.9232 ###	.1681	.3972
	- 1975 or after	.8670 ###	.1445	2.3797
First birth status: [No conception before marriage]	- Premarital birth	1.0685 ###	.1555	2.9109
	- Premarital conception	.6414 ###	.1615	1.8991
Place of residence: [Large urban]	- Small urban	-.6205 ###	.1317	.5377
	- Rural	-1.4345 ###	.3410	.2382
Religiosity: [Sometimes]	- Weekly or more	-.3457	.1808	.7078
	- Rarely or never	.5050 ###	.1190	1.6570

Log Likelihood = -2451.1016
Chi-Square = 450.65 ###
Degrees of Freedom = 12
Valid Cases = 2791   Missing Cases = 1000
Divorces = 366   Censored Cases = 2425

NOTES

(1) Reproductive individualism was entered as a continuous covariate. Age at marriage, Year of marriage, First birth status, Place of residence and Religiosity were entered as categorical variables.

(# p= .05   ## p= .01   ### p= .001)

coefficient for reproductive individualism is interpreted as follows. The percentage change in the hazard for each one unit change in the continuous variable is given by the exp(.0629) = 1.06. What this tells us is that with every increase of one in the reproductive individualism scale, the risk of divorce in any month increases 6 percent. Therefore, a women who obtains a score of +10 on the reproductive individualism scale runs a 120 percent greater risk of experiencing divorce during any month than a women who scores -10 on the reproductive individualism scale.

Aside from giving us a more accurate understanding of the impact of reproductive individualism on the risk of divorce, the additional information introduced into model 4 by entering reproductive individualism as a continuous covariate has materially attenuated the relationship between religiosity and divorce. Indeed, the beta coefficient for weekly attendance at church services of -.3457 is no longer significantly different from zero, and its commensurate relative risk estimate of .7078 is no longer significantly different from the reference group value of 1.0.

Since rare church attendance remains highly significant, a provisional conclusion from model 4 is that lower scores on reproductive individualism account for much of the risk differential across religiosity categories observed in models 1 through 3. Like premarital cohabitation, frequent church attendance is a covariate that apparently conceals unmeasured selectivity regarding reproductive individualism.

When this selectivity is empirically exposed by entering reproductive individualism as a continuous covariate, the association between frequent church attendance and marital breakdown disappears as predicted in hypothesis (3). It seems that women who attend church one or more times per week experience a lower risk of divorce for the same reason they attend church so frequently. Their commitment to both marriage and religion is consistent with their low levels of reproductive individualism.

In view of the dramatic impact of entering the independent variable as a continuous variable, model 5 (in Table 12) was developed where other appropriate variables were entered as continuous covariates. Age at first marriage measured in chronological years, and year of first marriage were re-entered as continuous rather than dummy explanatory variables. Additionally, years of education was entered as a continuous covariate in the model.

Somewhat surprisingly, years of education emerged as a significant predictor of the risk of marital dissolution at the .05 level of significance. The exponentiated beta coefficient for education of .9529 tells us that every additional year of education reduces the risk of divorce in any marital duration by about 5 percent.

Similarly, an older age at marriage diminishes the risk of divorce. On the other hand, year of marriage is linked to an elevated chance of marriage dissolution.

TABLE 12: COX HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL AND CONTINUOUS COVARIATES, MODEL 5 (1).

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism: [Continuous covariate]	(N.A.)	.0662 ***	.0074	1.0685
Age at marriage: [Continuous covariate]	(N.A.)	-.0886 ***	.0205	.9152
Year of marriage: [Continuous covariate]	(N.A.)	.1079 ***	.0118	1.1140
Years of education: [Continuous covariate]	(N.A.)	-.0483 *	.0215	.9529
First birth status: [No conception before marriage]	- Premarital birth	.8934 ***	.1599	2.4435
	- Premarital conception	.5720 ***	.1610	1.7718
Place of residence: [Large urban]	- Small urban	-.6135 ***	.1319	.5414
	- Rural	-1.4359 ***	.3410	.2379
Religiosity: [Sometimes]	- Weekly or more	-.2973	.1810	.7428
	- Rarely or never	.5328 ***	.1187	1.7038

Log Likelihood = -2443.2284
Chi-Square = 452.83 ***
Degrees of Freedom = 10
Valid Cases = 2790   Missing Cases = 1001
Divorces = 366   Censored Cases = 2424

NOTES

(1) Age at marriage, Year of marriage, and Years of education were entered in this
model as continuous covariate.

(* p= .05   ** p= .01   *** p= .001)

Although the entry of three additional continuous
covariates had no impact on the beta coefficient for
reproductive individualism, the log-likelihood value of-
2443.2284 with 10 degrees of freedom was found to be
significantly lower than the log-likelihood statistic for
model 3. Hence, the use of continuous measures for
reproductive individualism, age at marriage, years of
marriage, and years of education has generated a model with
a significantly superior fit to the sample data.

The final stage in testing the hypotheses involved
testing and controlling for duration dependency in the
dependent variable. Failure to incorporate significant
duration dependency can yield biased risk estimates in
hazard modelling (Teachman et. al., 1991). Since the
Cox regression approach ignores duration dependency,
model 6 and model 7--shown in Table 13 and Table 14--were
constructed in order to thoroughly evaluate the
hypotheses developed in this study.

Model 6 depicts a hazard model analysis using
the Exponential regression method of estimation. Recalling
an earlier discussion in this chapter, the Exponential
regression procedure yields hazard estimates that
incorporate the stringent assumption that the underlying
risk of divorce--or the risk of divorce in the absence of
explanatory covariates--is constant over time. For the
purposes of this study, therefore, the main value of model 6
is that it serves as a standard for comparison with model 7.

TABLE 13: EXPONENTIAL HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL AND CONTINUOUS COVARIATES, MODEL 6 (1).

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism: [Continuous covariate]	(N.A.)	.0637 ***	.0074	1.0657
Age at marriage: [Continuous covariate]	(N.A.)	-.0861 ***	.0205	.9175
Year of marriage: [Continuous covariate]	(N.A.)	.0473 ***	.0079	1.0484
Years of education: [Continuous covariate]	(N.A.)	-.0460 *	.0216	.9550
First birth status: [No conception before marriage]	- Premarital birth	.8537 ***	.1596	2.3483
	- Premarital conception	.5563 ***	.1609	1.7442
Place of residence: [Large urban]	- Small urban	-.5978 ***	.1318	.5500
	- Rural	-1.3949 ***	.3407	.2478
Religiosity: [Sometimes]	- Weekly or more	-.2935	.1814	.7456
	- Rarely or never	.5121 ***	.1187	1.6687

Log Likelihood = -1143.4093
Chi-Square = 383.11 ***
Degrees of Freedom = 10
Valid Cases = 2788   Missing Cases = 1003
Divorces = 366   Censored Cases = 2422

NOTES

(1) The value of the constant in the exponential model is 7.9470
with a standard error of .5953.

(* $p = .05$ ** $p = .01$ *** $p = .001$)

TABLE 14: WEIBULL HAZARD MODEL FOR MARITAL DISSOLUTION WITH
CATEGORICAL AND CONTINUOUS COVARIATES, MODEL 7 (1).

Variable	Category	Beta (B) Coefficient	Standard Error	Exponent (B)
Reproductive individualism: [Continuous covariate]	(N.A.)	.0398 ***	.0050	1.0406
Age at marriage: [Continuous covariate]	(N.A.)	-.0530 ***	.0130	.9483
Year of marriage: [Continuous covariate]	(N.A.)	.0591 ***	.0053	1.0608
Years of education: [Continuous covariate]	(N.A.)	-.0316 *	.0135	.9688
First birth status: [No conception before marriage]	- Premarital birth	.5454 ***	.1019	1.7252
	- Premarital conception	.3538 ***	.1011	1.4244
Place of residence: [Large urban]	- Small urban	-.3864 ***	.0834	.6794
	- Rural	-.8851 ***	.2150	.4126
Religiosity: [Sometimes]	- Weekly or more	-.1867	.1126	.8296
	- Rarely or never	.3421 ***	.0748	1.4079

Shape Parameter = 1.6197 ***
Log Likelihood = -1102.2371
Chi-Square = 458.03 ***
Degrees of Freedom = 10
Valid Cases = 2788   Missing Cases = 1003
Divorces = 366   Censored Cases = 2422

NOTES

(1) The value of the constant in the Weibull model is 8.8581
with a standard error of .3935.

(* p= .05   ** p= .01   *** p= .001)

The Weibull regression estimates of risk in Table 14 incorporate duration dependency in the dependent variable. Indeed, a t-test of the shape parameter of 1.619, which measures duration dependency, confirms its significance. This tells us that the risk of marital breakdown increases with marital duration net of all the other variables in the model. At the same time, the significantly lower log-likelihood statistic for model 7 compared to model 6 tells us that accounting for duration dependency has substantially improved the fit of the model.

Accordingly, the beta coefficients in model 7 provide the most accurate measures of the effect of the independent and explanatory variables on the dependent variable. Having said this, it seems that the impact of most covariates has diminished when duration dependency is controlled for.

For instance, an increase of one in the reproductive individualism scale translates into a 4 percent greater risk of divorce in any given month. Alternatively, for every unit increase in reproductive individualism, the average duration of marriage declines by 4 percent (Blossfeld et al., 1989:186-196). While these figures represent a highly significant risk, they are lower than the estimates from the Exponential model which assume no duration dependency.

Similarly, the relative risk of divorce across categories of religiosity has substantially declined, although those who rarely or never attend church run a substantially greater risk of marital dissolution than

the reference group. Weibull regression estimates for weekly church attendance accord with models 4 through 6 in documenting that this covariate is not a relevant predictor of divorce when reproductive individualism is controlled for.

Thus, hypothesis (3) has received only partial empirical support across our hazard models of marriage dissolution. Reproductive individualism explains much but not all of the differential risk of divorce over three categories of religiosity. In particular, low reproductive individualism explains the lower risk of marriage breakdown among women who frequently attend church. Yet reproductive individualism only partially accounts for the higher relative risk of divorce among those who rarely attend church. A decisive test of hypothesis (3) requires the additional information about religiosity that would come with a more sophisticated and continuous measure of religious devotion.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The hazard models in chapter four generated results that were largely supportive of the basic tenets of this inquiry. This chapter will briefly review the substantive findings and integrate these with the sociological theory developed in chapters 1 and 2.

CONFIRMATION OF HYPOTHESES

(1) The major hypothesis in this study stated that reproductive individualism is directly related to the risk of marital dissolution in Canada. These two variables vary in the same direction with high reproductive individualism producing a high risk of marriage dissolution and low reproductive individualism producing a low risk of marital dissolution. Very strong support was found in the data for this crucial hypothesis.

(2) Evidence from the models also verified the second hypothesis that premarital cohabitation will be unrelated to the risk of marriage dissolution when reproductive individualism is controlled for. On the basis of theory, both the tendency towards cohabitation and the tendency towards divorce are behavioral manifestations of reproductive individualism.

(3) Religiosity will be unrelated to the risk of marriage dissolution when reproductive individualism is is controlled for. This hypothesis received only partial confirmation in the data analysis. Reproductive individualism explained the diminished risk of experiencing divorce associated with frequent church attendance. However, controlling for reproductive individualist attitudes only attenuated the heightened risk of divorce associated with infrequent church attendance. Although a stronger test of this hypothesis would result from more comprehensive measurement of religiosity, in all probability infrequent church attendance reflects a wide variety of attitudes that could be causally linked with marital instability.

DISCUSSION

The primary objective of this study was to place the process of marriage dissolution within a sociological framework. Drawing from concepts and ideas developed in the theory of Anthony Giddens, it was argued that expert reproductive systems—like all modern systems of expertise— operate to disembed or displace social action from its immediate social context.

With respect to expert reproductive systems, their rapid proliferation since the 1960's steadily disembedded reproduction from the social and biological categories that historically contained and defined this activity.

Additionally, the mediating effects of modern expert systems has made the enduring co-presence of husbands and fathers increasingly optional to childbearing and childrearing. Accordingly, the disembedding of reproduction helped bring about the dramatic erosion in the legitimacy of traditional normative structures surrounding reproduction.

Reproductive individualism is an attitude type that is almost demanded by the multiple choices engendered by expert reproductive systems, and reproductive individualism is well-suited to fill the emerging normative vacuum surrounding reproduction. Because monogamous marriage has historically been the immediate social context for reproduction in Western societies, we should not be surprised at the important finding that reproductive individualism is incompatible with marital stability.

The thesis also verified that reproductive individualism is incompatible with devotion to religious ideas. As the product of a pre-modern expert system, religious doctrines have historically championed the containment of reproduction within formal marriage. Furthermore, in recent years religious institutions have generally expressed vigorous opposition towards the expanding choices that are spawned by expert reproductive systems. By countering reproductive individualism, religion strengthens the legitimacy of childbearing and childrearing that is embedded within marriage.

Although reproductive individualism is incompatible
with religious devotion, reproductive individualism is
entirely consistent with Giddens' reflexively-organized "pure
relationship". The thesis discovery that reproductive
individualism accounts for the empirical association between
premarital cohabitation and divorce accords with the idea
that cohabiting closely approximates a pure relationship.
As such, premarital cohabitation is a behavioral expression
of reproductive individualism and it is the embrace of
reproductive individualism which places cohabitors at risk of
divorce.

IMPLICATIONS

The use of powerful survival analysis techniques such
as hazard modelling to study phenomenon such as marriage
dissolution, can lead to major advances in our theoretical
understanding of relevant social and demographic processes.
However, as this thesis demonstrates, such advan es will only
be realized if we measure theoretically salient attitudes
over time.

Specifically, the theory developed here suggests that
the shared object of attitudes towards expert reproductive
systems is the socio-spatial and temporal context of
reproduction. Moreover, at an abstract level this is the
shared object of analysis for social scientists who study
fertility, family formation, and marriage. It follows
that longitudinal measurement of attitudes towards the social
context of reproduction in general, and modern reproductive

technologies in particular, hold great promise for theory in family sociology and social demography.

As well, the work of Giddens gives reflexivity a pivotal role in explaining and predicting modern social behavior. Insofar as reflexivity involves the mobilization and definition of the self in terms of social knowledge, directly measuring reflexivity can be expected to significantly complement the modelling of attitudes and behaviors. Attitudes both form and are formed by social knowledge and experience. Hence, reflexivity may be a crucial link in the complex chain that connects individual attitudes and behavior with social values.

Aside from the theoretical advances that would accrue from longitudinal measurement of phenomenon such as reproductive individualism, there are more pragmatic considerations. A clear implication of this study is that the profound disembedding effects of expert reproductive systems will erode the capacity of many traditional social categories to explain variation in social demographic behaviors. We can include among these categories many of the standard sociodemographic variables that are the stock and trade of many demographers and sociologists.

The picture of the relationship between radical changes in reproductive technology and radical changes in family formation that has emerged from this inquiry leaves less room for traditional forms of marriage as a context for reproduction.

Of special interest then is the question of what the context of childbearing and childrearing will be in the future? In the short-term, this thesis clearly implies that the defamilization of reproduction has rendered men increasingly incidental to this activity. Hence, there is every reason to expect continued growth in common-law families, lesbian families, and single-parent families headed by women.

Over the long-term, however, it is vital to understand that the burgeoning choices offered up by expert reproductive systems reflect the growing scientific and technical appropriation of both male and female reproductive powers. For example, surrogacy and the development of ectogenesis technology could make women increasingly incidental to human reproduction.

Such possibilities are especially disturbing in view of the growing interest and influence of business in reproductive science and technology. Indeed, some economists see the next long-cycle of economic growth led by firms involved with the production and marketing of genetic and bioengineering.

In this regard, it is difficult to see how an ideology of reproductive individualism could sustain widespread support for the idea that reproduction remain an activity that should be primarily embedded in intimate social relations. More likely is the prospect that reproductive individualism will inspire enthusiasm for the fantastic

consumer choices that would come with the appropriation of human reproduction by the marketplace. Hence, the sociological relevance of reproductive individualism extends well beyond explaining recent changes in marriage and the family. Indeed, the theory developed in this thesis implies that reproductive individualism has great potential to serve as an ideological legitimation for the commodification and industrialization of human life.

APPENDIX I

Appendix I: Correlation Matrix (18 Variables)

	Q201	Q203C	Q203D	Q205A	Q205B	Q206A	Q211	Q215A	Q216
Q201	1.00000								
Q203C	.22457	1.00000							
Q203D	.12674	.17254	1.00000						
Q205A	.39869	.11512	.03742	1.00000					
Q205B	.42938	.12337	.07344	.49515	1.00000				
Q206A	.40744	.15935	.04710	.47249	.39848	1.00000			
Q211	.39380	.07521	.12715	.23480	.30267	.24502	1.00000		
Q215A	.28615	.26645	.02714	.19. 4	.20361	.24824	.16786	1.00000	
Q216	.41667	.12404	.08567	.36263	.37037	.37533	.33226	.27375	1.00000
Q217B	-.00498	-.07074	.02252	-.01016	-.00795	-.01275	.05899	-.04271	.02286
Q221	.33711	.16711	.06978	.27159	.30599	.32392	.31256	.26704	.33246
Q222	.25589	.11309	.05523	.16928	.20508	.22661	.28280	.18208	.21327
Q223	.16525	.12495	-.00171	.18378	.15153	.22523	.05956	.22745	.18554
Q224	.16303	.15718	.04554	.15662	.17894	.19082	.06726	.18088	.17647
Q228D	.25511	.09141	.04963	.28570	.24415	.27161	.12282	.20208	.22301
Q228E	.24535	.20620	.05182	.18584	.21125	.23518	.09828	.23789	.20164
Q228F	.25779	.19195	.02379	.21551	.21492	.25099	.12642	.20367	.21335
Q228G	.32800	.18942	.09246	.27350	.27627	.30181	.18146	.24704	.28791

	Q217B	Q221	Q222	Q223	Q224	Q228D	Q228E	Q228F	Q228G
Q217B	1.00000								
Q221	-.00743	1.00000							
Q222	-.03929	.52140	1.00000						
Q223	-.00989	.21680	.10978	1.00000					
Q224	-.07139	.24646	.12928	.30003	1.00000				
Q228D	-.00381	.16675	.08391	.17674	.16145	1.00000			
Q228E	-.04579	.20484	.09598	.17250	.23091	.36507	1.00000		
Q228F	-.05162	.21803	.10994	.16544	.22599	.34476	.60372	1.00000	
Q228G	-.02867	.27404	.16147	.17964	.21354	.40388	.57297	.53877	1.00000

NUMBER OF CASES = 4,233

DETERMINANT OF CORRELATION MATRIX = .0163157

KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY = .87542

BARTLETT TEST OF SPHERICITY = 17305.792,   SIGNIFICANCE = .00000

APPENDIX II

Appendix II: Correlation Matrix (16 Variables)

	0201	0203C	0205A	0205B	0206A	0211	0215A	0216	0221
0201	1.00000								
0203C	.22643	1.00000							
0205A	.39944	.11577	1.00000						
0205B	.42794	.12237	.49563	1.00000					
0206A	.40922	.16035	.47327	.39732	1.00000				
0211	.39530	.07662	.23560	.30125	.24689	1.00000			
0215A	.26820	.26802	.19734	.20217	.24951	.16981	1.00000		
0216	.41838	.12536	.36391	.36985	.37737	.33366	.27448	1.00000	
0221	.33987	.16827	.27247	.30482	.32596	.31506	.26875	.33420	1.00000
0222	.25803	.11421	.16992	.20448	.22793	.28362	.18230	.21446	.52206
0223	.16527	.12686	.18373	.15141	.22564	.05994	.22762	.18636	.21668
0224	.16530	.15752	.15716	.17794	.19242	.06827	.18176	.17846	.24784
0228D	.25483	.09203	.28562	.24402	.27139	.12261	.20193	.22326	.16654
0228E	.24571	.20687	.18643	.21224	.23701	.09904	.23757	.20284	.20544
0228F	.25769	.19106	.21499	.21454	.25152	.12740	.20398	.21386	.21838
0228G	.32819	.18984	.27293	.27618	.30203	.18150	.24713	.28922	.27411

	0222	0223	0224	0228D	0228E	0228F	0228G
0222	1.00000						
0223	.10935	1.00000					
0224	.13115	.29922	1.00000				
0228D	.08461	.17600	.16208	1.00000			
0228E	.09670	.17324	.23134	.36564	1.00000		
0228F	.10952	.16503	.22681	.34455	.60361	1.00000	
0228G	.16177	.17950	.21479	.40447	.57344	.53887	1.00000

NUMBER OF CASES = 4,252

DETERMINANT OF CORRELATION MATRIX = .0174260

KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY = .88026

BARTLETT TEST OF SPHERICITY = 17190.682, SIGNIFICANCE = .00000

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