

# **Household Formation and the “Second Demographic Transition” in Europe and the US: Insights from Middle Range Models.**

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## **1. Introduction**

In this chapter we shall first of all introduce the reader to the basic features of the demographic changes in patterns of household formation, by now often referred to as a “second demographic transition” (SDT), and link these to some more general societal changes that emerged roughly from the 1960s onward. These changes pertain to various domains and include economic transformations as well as cultural shifts. It is clear that we are using a multi-factor explanation for the SDT in which both economic and cultural factors are necessary. None of these factors taken separately are sufficient, and all are non-redundant. But their respective weight and role can vary across societies, and much of this variation is an outcome of historical path dependency.

In this chapter two models will be of assistance in putting the various explanatory mechanisms in perspective. These models form mini-theories, just like what Robert Merton had in mind when he referred to “middle range theories” in sociology. That is why I like to call these models “middle range models”, because they too are of direct use in describing *processes* while remaining *close to a specific body of empirical evidence*. The two models that we shall use here are (i) the “*Ready, Willing, and Able*” model of innovation and diffusion (RWA for short) and (ii) the “*footprints*” model of selection and adaptation.

The former is a model of preconditions for innovation and diffusion of new forms of behavior and it is ideally suited for identifying the limiting conditions or the bottlenecks in such processes (Lesthaeghe and Vanderhoeft, 1999). The term stems directly from A.J. Coale’s summary reformulation (1973) of conditions permitting the start of the historical, “first” demographic transition. However, a more elaborate RWA-model has been developed subsequently and will be used here.

The footprints model, on the other hand, is designed to show how individual choices during the life course are *processes of self-selection*, partially oriented by values, but equally to illustrate the *feed-back mechanisms* of a particular choice upon the initial steering conditions. The model ideally needs panel data for testing, but the mechanism leaves very specific “*footprints*” that can be detected in cross-sections (without these being adequate substitutes for panels !). The model is in essence of the “life cycle” type, but it accommodates successive cohort shifts as well. In fact the latter are necessary to allow for the observed development of a new demographic regime.

But first we need a brief explanation of what is understood by “a second demographic transition”.

## **2. From a first to a second demographic transition.**

The first demographic transition refers to the original declines in fertility and mortality, as witnessed in western countries already from the 18<sup>th</sup> and 19<sup>th</sup> Centuries onward, and during the second half of the 20<sup>th</sup> Century in the rest of the world. At present, there is hardly any country left without a beginning of a fertility decline brought by the manifest use of contraception. Moreover, this “first” demographic transition (FDT) was equally accompanied by an overhaul of traditional family formation systems. In the West, the control of fertility within wedlock occurred in tandem with a reduction in final celibacy and a lowering of ages at marriage, signaling a major departure from its old Malthusian nuptiality system. In the rest of the world, early marriage for women – often the result of arrangements between families or lineages – gave way to much later marriage, partly because of more individual partner choice and partly as a response to economic factors. But on the whole, William Goode’s prediction of 1963 forecasting a rise in non-western ages at marriage, has largely been borne out by the record of the last 40 years. This increase in ages at marriage has furthermore been a significant component in the overall fertility decline in many such countries.

But even before the FDT started spreading from the West and Japan to the LDCs, western populations were initiating a move that would take them way beyond what classic “demographic transition theory” had forecasted. The fertility decline did not stop in the close vicinity of two children on average, and western marriage would not stay early or attract the vast majority of men and women. The end product does not seem to be a balanced stationary population with zero population growth and little or no need for immigrants. The “second demographic transition” (SDT) brings sustained sub-replacement fertility, a multitude of living arrangements other than marriage, the disconnection between marriage and procreation, and no stationary population. Instead, western populations face declining sizes, and if it were not for immigration, that decline would have started already in many European countries. In addition, extra gains in longevity at older ages in tandem with sustained sub-replacement fertility will produce a major additional ageing effect as well.

The first signs of the SDT emerge already in the 1950s: divorce rates were rising, especially in the US and Scandinavia, and the departure from a life-long commitment was justified by the logic that a “good divorce is better than a bad marriage”. Later on and from the second half of the 1960s onward, also fertility started falling from its overall “baby boom” high. Moreover, the trend with respect to ages at first marriage was reversed again, and proportions single started rising. Soon thereafter it became evident that premarital cohabitation was on the rise and that divorce and widowhood were followed less by remarriage and more by post-marital cohabitation. By the 1980s even procreation within cohabiting unions had spread from Scandinavia to the rest of Western Europe. For instance, both France and the UK now have more than 40 percent of all births occurring out of wedlock. In 1960 both had 6 percent.

The idea of the *distinctness* of the SDT stems directly from Philippe Ariès's analysis of the history of childhood (1962) and from his 1980 Bad Homburg paper on the two successive and distinct motivations for parenthood. During the FDT, the decline in fertility was "unleashed by an enormous sentimental and financial investment in the child" (i.e., the "king child era" to use Ariès's term), whereas the motivation during the SDT is adult self-realization within the role or life style as a parent or more complete and fulfilled adult. This major shift is also propped up by the innovation of hormonal and other forms of highly efficient contraception. During the FDT the issue was to adopt contraception in order to avoid pregnancies; during the SDT the basic decision is to stop contraception in order to start a pregnancy.

The other "root" of the SDT-theory was connected to a reaction of van de Kaa and myself toward the cyclical fertility theory, as formulated by Richard Easterlin (1973). In this theory, small cohorts would have better employment opportunities and hence earlier marriage and higher fertility, whereas large cohorts would have the opposite life chances and inversed demographic responses. The theory accounts very nicely for the marriage and baby boom of the 1960s, and also for the subsequent "baby bust" of the 1970s. But the theory equally predicts further cycles produced by the earlier ones, and hence expects a return of fertility to above replacement levels when smaller cohorts reach the reproductive span. By the middle of the 1980s we had become convinced that sub-replacement fertility was not only going to last much longer, but could even become an "intrinsic" feature of a new demographic regime. Exits the model of an ultimate stationary population with a long-term population equilibrium, and exits the improved version of it with cyclical fertility swings around replacement fertility.

Having pointed out the intellectual origins of the SDT, we shall now turn to a more systematic treatment of the contrasts between the FDT and the SDT. Table 1 gives a summary of the points to be discussed.

Table 1: Overview of demographic and societal characteristics respectively related to the FDT and SDT (reference is Western Europe).

FDT	SDT
<p><b>A. Marriage</b></p> <ul style="list-style-type: none"> <li>• Rise in proportions marrying, declining age at first marriage</li> <li>• Low or reduced cohabitation</li>   <li>• Low divorce</li> <li>• High remarriage</li> </ul> <p><b>B. Fertility</b></p> <ul style="list-style-type: none"> <li>• Decline in marital fertility via reductions at older ages, lowering mean ages at first parenthood</li> <li>• Deficient contraception, parity failures</li> <li>• Declining illegitimate fertility</li>   <li>• Low definitive childlessness among married couples.</li> </ul>	<ul style="list-style-type: none"> <li>• Fall in proportions married, rise in age at first marriage</li> <li>• Rise in cohabitation (pre- &amp; post-marital)</li> <li>• Rise in divorce, earlier divorce</li> <li>• Decline of remarriage following both divorce and widowhood</li>   <li>• Further decline in fertility via postponement, increasing mean age at first parenthood, structural subreplacement fertility</li> <li>• Efficient contraception (exceptions in specific social groups)</li> <li>• Rising extra-marital fertility corresponding to parenthood within cohabitation</li> <li>• Rising definitive childlessness in unions</li> </ul>

<p><b>C. Societal background</b></p> <ul style="list-style-type: none"> <li>• Preoccupations with basic material needs: income, work conditions, housing, health, schooling, social security. “Fordist” organization. Solidarity prime value</li> <li>• Rising memberships of political, civic and community oriented networks. Strengthening of social cohesion</li> <li>• Strong normative regulation by State and Churches. First secularisation wave, patronage, political and social “pillarization”</li> <li>• Segregated gender roles, familistic policies, “embourgeoisement”, promotion of breadwinner family model.</li> <li>• Ordered life course transitions, prudent marriage and dominance of one single family model.</li> </ul>	<ul style="list-style-type: none"> <li>• Rise of “higher order” needs: individual autonomy, self-actualisation, expressive work and socialisation values, grass-roots democracy, recognition. “Post-Fordist” reaction. Tolerance prime value.</li> <li>• Disengagement from civic and community oriented networks, social capital shifts to expressive and affective types. Weakening of social cohesion.</li> <li>• Retreat of the State, second secularisation wave, sexual revolution, refusal of authority, emancipation, political “depillarization”.</li> <li>• Rising symmetry in gender roles, female economic autonomy.</li> <li>• Flexible life course organization, multiple lifestyles, open future.</li> </ul>
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### 2.1. Opposite nuptiality regimes

As already indicated, a first major contrast between the FDT and SDT is the opposite trend in nuptiality. In Western Europe the Malthusian late marriage pattern weakens, mainly as the result of the growth of wage earning labor, and this basic trend toward earlier and more universal marriage continues all the way till the middle of the 1960s. Hence, the lowest mean ages at first marriage since the Renaissance were reached in the middle of the 20<sup>th</sup> Century. Furthermore, the pockets in Western Europe where cohabitation and out of wedlock fertility had remained high during the 19<sup>th</sup> Century were under siege during the first half of the 20<sup>th</sup> Century. Such behavior was not in line with both the religious and the secular views on what constituted a proper family. Extra-marital fertility rates all decline in Europe after 1900.

By contrast, after 1965, ages at marriage rose again and cohort proportions ever-married started declining (Council of Europe, 2004). This resulted not only from the insertion of an interim period of premarital cohabitation, but also from later home leaving and more and longer single living. The very rapid prolongation of education for both sexes since the 1950s and the ensuing change in educational composition of Western populations contributed to this process. But the unfolding of the nuptiality features of the SDT did not solely stop at a rise in ages at marriage and at a mere insertion of an interim “student” period. Post-marital cohabitation too was on the rise, and so was procreation outside wedlock. And in many instances the latter trend is to some extent a “revenge of history”: cohabitation and procreation by non-married couples is now often highest where the custom prevailed longest during the 19<sup>th</sup> and early 20<sup>th</sup> Centuries.

The next contrast between FDT and SDT pertains to divorce and remarriage. The FDT is preoccupied with strengthening marriage and the family, and divorce legislation remains strict. The State offers little opposition to religious doctrine in this

respect. Divorce on the basis of mutual consent is rare, but mostly based on proven adultery. The SDT witnesses the end of a long period of low divorce rates and the principle of a unique, life-long legal partnership is questioned. This takes the form of a rational “utility” evaluation of a marriage in terms of the welfare of each of the adult partners first and children second. This is accompanied by attacking the hypocrisy of the earlier restrictive divorce legislation that fostered concubinage instead. The outcome in Western Europe, US, Canada, Australia and New Zealand was a succession of legal liberalizations in the wake of a singularly rising demographic trend. And, as pointed out in the introduction, the onset of the rise in divorce was probably the very first manifestation of the accentuation of individual autonomy in opposing the moral order prescribed by Church and State.

And last, but not least, FDT and SDT have also opposite patterns of remarriage. During the former, remarriages were essentially involving widows and widowers, whereas remarriage for divorced persons meant a new beginning and the start of a new family: “new children for a new life-long commitment”. In other words, even if divorce occurred, the institution of marriage was not under serious threat, and remarriage propped up fertility as well. Nothing of this is left in the SDT: remarriages among widowed or divorced persons decline in favor of cohabitation or other looser arrangements such as LAT-relationships or close and intimate friendships. This may not only have tax advantages or protect the inheritance rights of ones own children, but it essentially leaves all further options open and safeguards individual autonomy. In other words, also these arrangements are manifestations of the new individual desire to keep an “*open future*” with a minimal loss in social capital.

## 2.2. Fertility contrasts.

The SDT is not merely focusing on changing nuptiality and family patterns, but equally concerned with fertility. We would like to recall that it were Philippe Ariès’s piece on two successive fertility motivations and Easterlin’s work on a cyclical fertility model that inspired our work on the SDT.

During the FDT fertility becomes increasingly confined to marriage, contraception affects mostly fertility at older ages and higher marriage durations, mean ages at first parenthood decline, and among married couples childlessness is low. There are examples of below-replacement fertility during the FDT, but these correspond to exceptional periods of deep economic crises or war only. Sub-replacement fertility is not an intrinsic characteristic of the FDT. Under better conditions, as for instance after World War II, fertility levels are well above replacement level, and this not only holds for period indicators but also for cohort levels. The “baby boom” and the “marriage” boom of the late 50s and early 60s are the last typical features of the FDT (whereas rising divorce in that period signals the start of the SDT). Another salient characteristic of the FDT fertility regime was its reliance on imperfect contraception. Until the 1960s, *coitus interruptus* was largely the method used by the working classes and rhythm by the higher educated or more religious couples. Both methods led to contraceptive failures and unintended pregnancies, and these also kept fertility above replacement level. Particularly such parity failures at higher ages became increasingly undesirable and fuelled the demand for more efficient contraception.

The SDT starts with a multifaceted revolution, and all aspects of it impact on fertility. Firstly, there was a *contraceptive revolution* with the invention of the pill and the re-invention of IUDs. All of these were perfected very rapidly, and particularly hormonal contraception was suited for postponing and spacing purposes. A.J. Coale's 1974 "learning curve" of contraception, which was monotonically increasing with age and which fitted the FDT experience so well, is no longer applicable in the West. After an interim period with increased incidence of "shotgun marriages" (often 1965-75), the use of highly efficient and reliable contraception starts at young ages and permits postponement of child-bearing as a goal in its own right. Secondly, there was also a *sexual revolution*, and it was a forceful reaction to the notions that sex is confined to marriage and mainly for procreation only. The younger generations sought the value of sex for its own sake and accused the generation of their parents of hypocrisy. Ages at first sexual intercourse decline during the SDT. Thirdly, there was the *gender revolution*. Women were no longer going to be subservient to men and husbands, but seize the right to regulate fertility themselves. They did no longer undergo the "fatalities of nature", and this pressing wish for "biological autonomy" was articulated by subsequent quests for the liberalization of induced abortion. Finally, these "three revolutions" fit within the framework of an overall rejection of authority and of a complete overhaul of the normative structure. Parents, educators, churches, army and much of the entire State apparatus end up in the dock. This entire ideational reorientation, if not revolution, occurs during the peak years of economic growth, and shapes all aspects of the SDT.

The overall outcome with respect to the SDT fertility pattern is its marked degree of postponement. Mean ages at first parenthood for women in sexual unions rise quite rapidly and to unprecedented levels in several Western European populations. The net outcome is sub-replacement fertility: without the distinct ethnic contribution (such as that of Hispanics in the US or of Maoris in New Zealand) all OECD countries have sub-replacement fertility. Admittedly, period measures such as the TFR are extra depressed as a result of continued postponing, but even the end of such postponement is not likely to bring period fertility back to 2.05 children. Most cohorts of the world's white (+ Japanese) national populations born after 1960 will not make it to that level (cf. Frejka and Calot, 2001; Lesthaeghe, 2001, Council of Europe, 2004). However, the degree of heterogeneity is substantial and by no means solely the outcome of ethnic composition factors. In the West, Scandinavian, British and French cohorts born in 1960 still come close to replacement fertility, whereas these cohort levels fall below 1.70 in Austria, the whole of Germany and Italy. In Central and Eastern Europe, the cohort of 1960 will still get to two children on average, but not in the Russian Federation, Slovenia and the three Baltic countries (Council of Europe, 2004). Moreover, in Western and Southern European countries with current total period fertility rates below 1.5, the catching up of fertility at the later childbearing ages, i.e. after age 30, has simply remained too weak to offset the postponement effect. The result of sustained sub-replacement fertility is that another, but originally unanticipated trait of the SDT may be in the making: continued reliance on international migration to partially offset the population decline that would otherwise emerge within a few years. The need for "replacement migration" (United Nations, 2000) is an essential SDT feature.

Evidently, we are very far from the ideal FDT outcome of a new stationary population corresponding to high life expectancies, replacement fertility, and little need for

immigration. And we are getting further and further removed from the FDT prop of that demographic model, i.e. the dominance of a single form of living arrangement for couples and children (namely marriage). Finally, the linchpin of the FDT system has totally eroded: collective behavior is no longer kept on track by a strong normative structure based on a familistic ideology supported by both Church and State. Instead, the new regime is governed by the primacy of individual freedom of choice. Or as van de Kaa (2004) has put it, fertility is now merely a “*derivative*”, meaning that it is the outcome of a prolonged “*process of self-reflection and self-confrontation on the part of prospective parents.... Then the pair will weigh a great many issues, direct and opportunity costs included, but their guiding light is self-confrontation: would a conception and having a child be self-fulfilling?*”

### 2.3. Underlying societal contrasts.

So far, we have mainly discussed the differences between the FDT and SDT in terms of their demographic contrasts. But both demographic transitions have of course their roots in two distinct historical periods of societal development. Table 1 again contains a summary.

With the exception of the very early fertility decline in France and a few other smaller areas in Europe, much of the FDT is an integral part of a development phase in which economic growth fosters material aspirations and improvements in material living conditions. The preoccupations of the 1860-1960 period were mainly concerned with increasing household real income, improving working and housing conditions, raising standards of health and life expectancy, improving human capital by investing in education, and providing a safety net for all via the gradual construction of a social security system. In Europe, these social goals were shared and promoted by all ideological, religious or political factions or “pillars”. And in this endeavor solidarity was a central concept. All pillars also had their views on the desirable evolution of the family. For the religious pillars these views were based on the holiness of matrimony in the first place, but their defense of a closely knit conjugal family also stemmed from fears that the industrial society would lead to immorality, social pathology and to atheism. The secular pillars (i.e. Liberal and Socialist) equally saw the family as a first line of defense against the social ills of the 19<sup>th</sup> Century, and as the foundation for their building of a new social order. Hence, although for different reasons, all pillars considered the family as the cornerstone of society. Both material and moral uplifting would furthermore be served best by a sharp gender-based division of labor within the family: husbands assume their responsibilities as devoted breadwinners, and wives become the caretakers of all quality related matters. For this to be realized, male incomes needed to be high enough so that women could assume the role of housewives. In other words, all pillars, including the Socialist and even Communist ones, contributed to the *embourgeoisement* of the working class through this propagation of the breadwinner – housewife model.

In short, for all social classes there should be a single family model and it should be served by highly ordered life course transitions: no marriage without solid financial basis or prospects, and procreation strictly within wedlock. The Malthusian preconditions of a “prudent” marriage were readapted to the social aspirations of the new industrial society.

The SDT, on the other hand, is founded on the rise of the “higher order needs” as, for instance, defined by Maslow (1954). Once the basic material preoccupations, and particularly that of long term financial security, are satisfied via welfare state provisions, more existential and expressive needs become articulated. These are centered on *self-actualization* in formulating goals, *individual autonomy* in choosing means, and *recognition* for their realization. These features emerge in a variety of domains, and this is why the SDT can be linked to such a wide variety of empirical indicators of ideational change.

In the political sphere such higher order or “post-materialist” (Inglehart, 1970) needs deal, *inter alia*, with the quest for more direct, grassroots democracy, openness of government, rejection of political patronage, decline of life-long loyalty to political or religious pillars (= “depillarization”), and the rise of ecological and other quality rather than quantity oriented issues on the political agenda. The downturn of it all is rising distrust in politics and institutions and growing political anomy that can fuel right wing extremism. The state is no longer viewed in terms of a benign provider, but again more as an Orwellian “big brother”. A corollary thereof is the disengagement from civic, professional and community oriented networks (e.g. Putnam, 2000). It is likely, however, that they were partially substituted by more expressive (fitness clubs, meditation gatherings ...) or more affective (friendships) types of social capital. Work values and socialization values equally display a profound shift in favor of the expressive traits, and above all, away from respect for authority. In the former sphere, one is no longer satisfied with good material conditions (pay, job security, vacations), but more and more expressive traits are being valued (e.g. interesting work, contact with others, work that meets ones abilities, challenging and innovative work, variation in tasks, flexible time use, etc.). Obviously this “anti-Fordist” orientation is initially the result of rising education and the growth of white-collar employment (e.g. Kohn, 1977), but it has now spread to all social classes and types of employment. A strong parallel can be found in the domain of socialization as well (e.g. Alwin, 1989): all elements typical of conformity (obedience, order and neatness, thrift and hard work, traditional gender roles, religious faith) and those linked to social orientations (loyalty, solidarity, consideration for others) have gradually given way to expressive traits that stress personality (being interested in how and why, capability of thinking for oneself, self-presentation, independence and autonomy). Needless to say that the quest for more symmetrical gender relations fits within this overall framework of articulation of higher order needs and expressive social roles.

### **3. The RWA-Model: Spatial Patterns of the Second Demographic Transition in the US.**

In this section we shall present the basic form of the RWA-model and explain the role of limiting factors during the process of innovation and diffusion of new forms of behavior. Subsequently, we shall present some of the European FDT and SDT findings, but the bulk of the section will be devoted to the US spatial patterns of the SDT dimension in household formation.

#### **3.1. A model of innovation and diffusion of new behavioral forms.**



At the end of the Princeton European Fertility Project that studied the historical fertility and nuptiality transitions, A.J. Coale (1973) came up with a succinct and catchy formulation of the three preconditions for a demographic transition to occur. This clearly superseded the more detailed narratives offered by the various country studies, but caught the gist of their findings. Firstly, says Coale, any new form of behavior must yield benefits that outweigh the costs or disadvantages. If there is no such economic advantage (= “Readiness” or R), then that new form of behavior will not be attractive and there will not be a breakthrough. Secondly, the new form must be “legitimate”, i.e. it must be culturally and ethically acceptable. If the new form of behavior runs counter to prevailing beliefs or to religious or moral rules, then the condition of “Willingness” (=W) will not be met. Thirdly, there must be adequate means (e.g. of a technical or legal nature) to implement the new form. This is the “Ability” condition (=A). The three preconditions must be met jointly for a success **S** (i.e. a breakthrough of a new behavioral form) to occur:

$$\mathbf{S} = \mathbf{R} \text{ AND } \mathbf{W} \text{ AND } \mathbf{A} \quad \text{or} \quad \mathbf{S} = \mathbf{RWA}$$

Where *AND* is the logical “and”. Any failure of satisfying merely one of the three conditions results in an overall failure, i.e. there will be no adoption or breakthrough or transition to that new behavioral form.

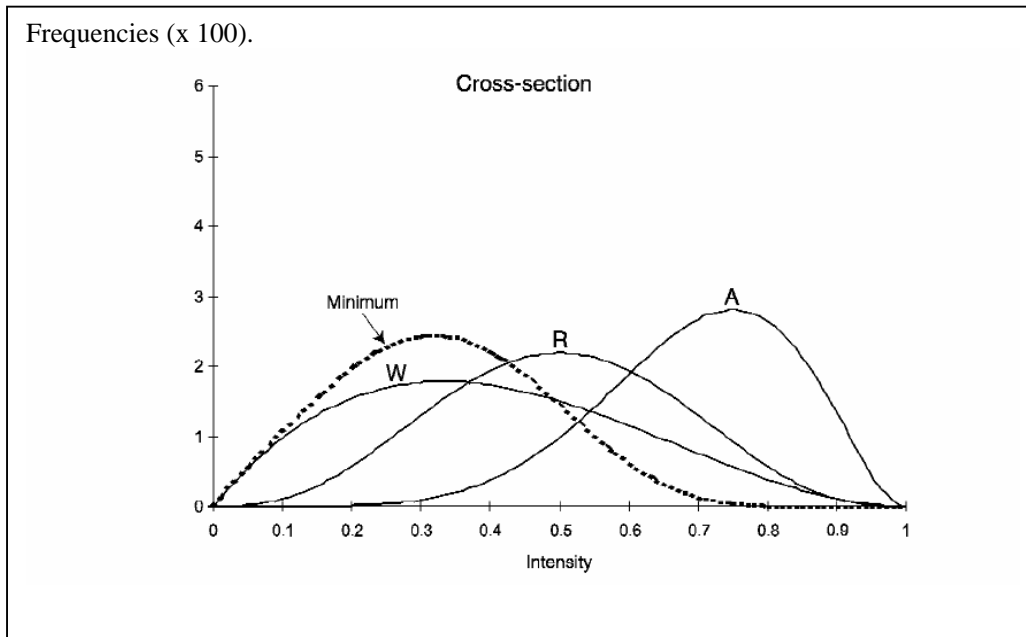
The RWA-model can be specified at the micro level as well (Lesthaeghe and Vanderhoeft, 1999). Any individual or household *i* would have its own set of 3 scores for respectively  $R_i$ ,  $W_i$ , and  $A_i$ . These scores range in intensity from zero to unity. Zero then means: no perceived advantage at all, not acceptable on moral, religious or other cultural grounds, and no means of implementation. Unity corresponds to: numerous advantages completely outweigh any disadvantages, perfectly morally and culturally acceptable, and no “technical” impediments to implementation. A score of 0.5 corresponds to a point of indecision. The condition for a success is satisfied when all three scores move beyond that mid-way point, and are hence larger than 0.5. Another way of stating this is that each individual or household has a minimum score  $MIN_i$  which is the *smallest* of the three component scores  $R_i$ ,  $W_i$  or  $A_i$ .

$$MIN_i = \text{Minimum}(R_i, W_i, A_i)$$

Hence, any actor will only adopt a new form of behavior if his  $MIN_i > 0.5$ .

The collection of individual scores obviously form three distributions, respectively for R, W and A, but the collection of individual minima will add a fourth distribution. This MIN distribution will of course depend on the location and shapes of the R, W and A distribution, but its mean will always be lower than that of the other three (cf. Lesthaeghe and Vanderhoeft, 1999). The example in Figure 1 clarifies this point.

Figure 1: RWA-model – Example of location of the  $R_i$ ,  $W_i$ , and  $A_i$  distributions together with that of the distribution of their minima ( $MIN_i$ ).



In this particular example, most actors know about proper ways of implementing the new form of behavior so that the distribution of A has already shifted to the right on the 0-1 intensity scale. With respect to readiness, the modal category is undecided (score 0.5) with half the population still not seeing a decisive advantage. But the majority in this example considers the new form of behavior as ethically or culturally unacceptable. The distribution of the scores that are the smallest of the previous three is located quite a bit further to the left than any of the other three distributions and only a small fraction has crossed the 0.5 point. Hence, few people have made a transition to a new form of behavior. Non-willingness obviously contributes disproportionately to the lower minima, and is therefore a dominant bottleneck factor or inhibitor.

During a process of change, all four frequency distributions move from the low end to the high end of the intensity scale on the horizontal axis, with the distribution of the minima always trailing behind. The R, W, and A distributions can follow their own pace, and as they shift, also their variances will tend to expand. At the onset, variances are low since the vast majority has low scores on all distributions, and at the end of the transition, variances will again diminish as more and more persons end up with high scores for every precondition. Mid-way, variances are highest, and the same holds for the distribution of minima. Moreover, it is likely that at that time the MIN-distribution also comes close to adopting a bell-shaped curve. If this occurs, then our RWA-model will produce a growth curve of adopters of new behavioral forms that closely resembles Verhulst's logistic curve (elongated S-curve). Many innovations and their diffusion, from gothic cathedrals to airports, from epidemics to rumors, follow such a logistic growth curve. Furthermore, the logistic curve for an older innovation tends to taper off and reach a saturation-level of no further expansion when new and better technologies or innovations start growing and replacing it. Also, the latest innovation can entirely wipe out the older pattern, and in this instance there

is a new transition. And, if such transitions succeed each other, there is no problem with numbering them as a simple means of identification.

So far we have treated the shifts in the distributions of R, W and A to be independent. This is not likely to hold. Economists (but also Marxists), for instance, would commonly argue that R is the leading condition and that W and A would follow. As material conditions change, people adjust their behavior to such new circumstances and opportunities, and both morality and technology will come under increasing pressure to adapt as well. There are of course numerous examples where other sequences hold. Breakthroughs in genetics and reproductive technology, for instance, have opened up avenues for new interventions, and in this case A is the leading condition. Similarly, some cultures may have no objections to many forms of contraception and commonly accept abortion, and then it will not be the W-distribution that trails behind the other two. To sum up, the sub-model with R being the leading condition and with a cultural and/or technological lag may be frequently encountered, but it is by no means the only possibility.

If the RWA-model operates at the individual level, then various processes of diffusion can be attached to it. If we stick to a simple model, individual scores for each of the three conditions can be written as a function of two different sorts of impact: (i) the effects of the actors own characteristics, and (ii) the effect of network influences (cf. Marsden, 1998, Montgomery and Casterline, 1996, Kohler, 2001). In the network part, each individual can be given a “credibility” weight, and furthermore for each actor we can specify a “self-reliance” weight and an overall “network influence” coefficient. In more intimate matters, actors tend to give a greater weight to those members of their networks that are closest to them such as kin or trusted friends. Hence, such opinions and, probably even more so, close examples of new behavior may exert a strong “bandwagon” effect. This is of course dependent on the degree of social control exerted within a given group or area, and ultimately on the degree of individual autonomy that is allowed or the social cost of deviating from the older pattern. Such dynamics of diffusion would be applicable to each of the three preconditions R, W and A (Lesthaeghe and Vanderhoeft, 1999), without implying that the three distributions would move at the same pace. For instance, in LDCs knowledge about family planning technology and services (= ability factor) can be spread very rapidly via the media, whereas the religious and ethical aspects of fertility limitation (= willingness factor) will typically be discussed in local communities and smaller groups. An outcome for sub-Saharan African populations in this respect was that the initial limiting condition associated with the adoption of fertility control was indeed a lack of knowledge about FP, but later on this was largely remedied. The distribution of the A-factor swiftly moved to the right following mass media propagation, so that later on especially the W-factor became a new limiting condition. This illustrates how different network influences can be at work in producing a “leap frogging” feature among the R, W and A distributions over time (Ibidem, 1999).

For each of the three diffusion patterns with respect to R, W and A, we should expect there to be at least one locus of initial innovation from which the diffusion occurs until it meets social barriers. These barriers can be social class distinctions, cultural obstacles (e.g. religious differences), or communication barriers (e.g. linguistic borders). From that point onward socio-economic, cultural and spatial variables

observable at the macro level (e.g. for spatial units) will emerge as determinants of the process of differential diffusion (cf. Bocquet-Appel, 1996).

To sum up: at present we have a model of innovation based on Coale's initial model of three preconditions and capable of producing a logistic growth curve for any new form of behavior. Each of the three preconditions can be "individualized" and translated back to the macro-level in the form of shifting distributions. Moreover these shifts and especially differences in the pace of the shifts can be linked to mechanisms of social and spatial diffusion of the "contagion"-type, in which network contacts are essential. Then social group and/or geographical patterns emerge in which innovating groups or regions lead the way, and in which others follow depending on the strength of various types of barriers. Such barriers can exist with respect to any of the three preconditions, but since the MIN-distribution in the RWA-model is the crucial one, it suffices that only one of the three preconditions to be obstructed for the diffusion of the new behavioral form to be stopped or delayed at such a social or spatial barrier. This has important consequences:

1. *Those in the vanguard of a transition must score high on all three conditions and this will set them apart from the others with at least one condition not being met.*
2. *Conversely, if one of the three distributions substantially lags behind the others, then many MIN-scores will largely be determined by that bottleneck condition, and the best correlates of the outcome will be indicators of that barrier.*

The final outcome of the use of the RWA-model is that it expects both structural and cultural factors to emerge as correlates. The RWA specification leaves little room for disciplinary debates of the type "economics versus culture", or by extension, for squabbles between economics, sociology or political science. Anyone of these three can come up with strong "correlational" results, but the irony is that "victory" for a discipline can be claimed following the identification of a type of regressors (e.g. economic, structural, cultural...) with the largest and most significant coefficients, when in fact such statistical predictors merely tend to identify the *slowest moving condition* in an innovation and diffusion process. The earlier types of analysis with "*the buck stops at socio-economic structure*" in sociology and social history and the subsequent "*cultural turn*" in the social sciences (see Sewell, 2005, esp. Chapters 1 and 2) just lead from one form of reductionist fallacy to another. The RWA model simply recognizes that processes of social change are the outcomes of (i) socio-economic structures with their specific configurations of opportunities and constraints AND (ii) of the adaptive capacity of cultural scripts of legitimation, AND (iii) of policies affecting the technical and legal environments. The AND is again the logical "and", and the factors that cause leads and lags over time can vary widely. Some configurations are remarkably recurrent ones, but others can indeed be totally "historically idiosyncratic".

### 3.2. Major SDT – components in the US.

In this section we shall document that marriage and fertility postponement, premarital cohabitation and even fertility within cohabitation follow similar trends as in Western Europe, but also that the current spatial variation in the US remains very important.

First of all, ages at first marriage for both non-Hispanic white and black populations alike have been rising since the 1970s and that occurred in tandem with a rise in both single living and especially cohabitation. As can be seen in Table 1 with data from the US National Survey of Family Growth (R.K. Raley, 2000, p. 27), the majority (62%) of the cohort of white women born in 1950-55, and reaching age 25 in the late seventies, was married by age 25 and they had done so without premarital cohabitation. In that cohort, a further 12% was already married by that age, but had started a cohabiting union prior to their marriage. Another 6% of white women was still in cohabitation by age 25, and only 20% had not yet started a union at all. The contrast with the cohort born in the years 1965-69, and reaching age 25 in the early nineties, is striking. For the latter the proportion directly moving into marriage was almost halved, from 62% to 32%, and the shares of those married after cohabitation and of those still in cohabitation by age 25 both doubled, from 12% to 25% and from 6% to 14% respectively. Also, the proportion still single rose from 20% to 29%. Note the shift among the black population as well: by age 25, the percentage directly married without prior cohabitation declined from 44% to barely 18% in the same period, whereas the proportion still cohabiting by age 25 increased from 12% to 23%.

**Table 2: Changes in patterns of union formation among US white and black women: positions at age 25 for 4 birth cohorts.**

At age 25 :	1. No union	2. Cohabiting and not married	3. Married after cohab	4. Married without cohab
White women, cohort of:				
1950-54	20%	6	12	62
1955-59	22	11	18	49
1960-64	25	14	21	40
1965-69	29	14	25	32
Black women, cohort of:				
1950-54	31%	12	13	44
1955-59	47	16	10	27
1960-64	44	22	12	22
1965-69	46	23	14	18

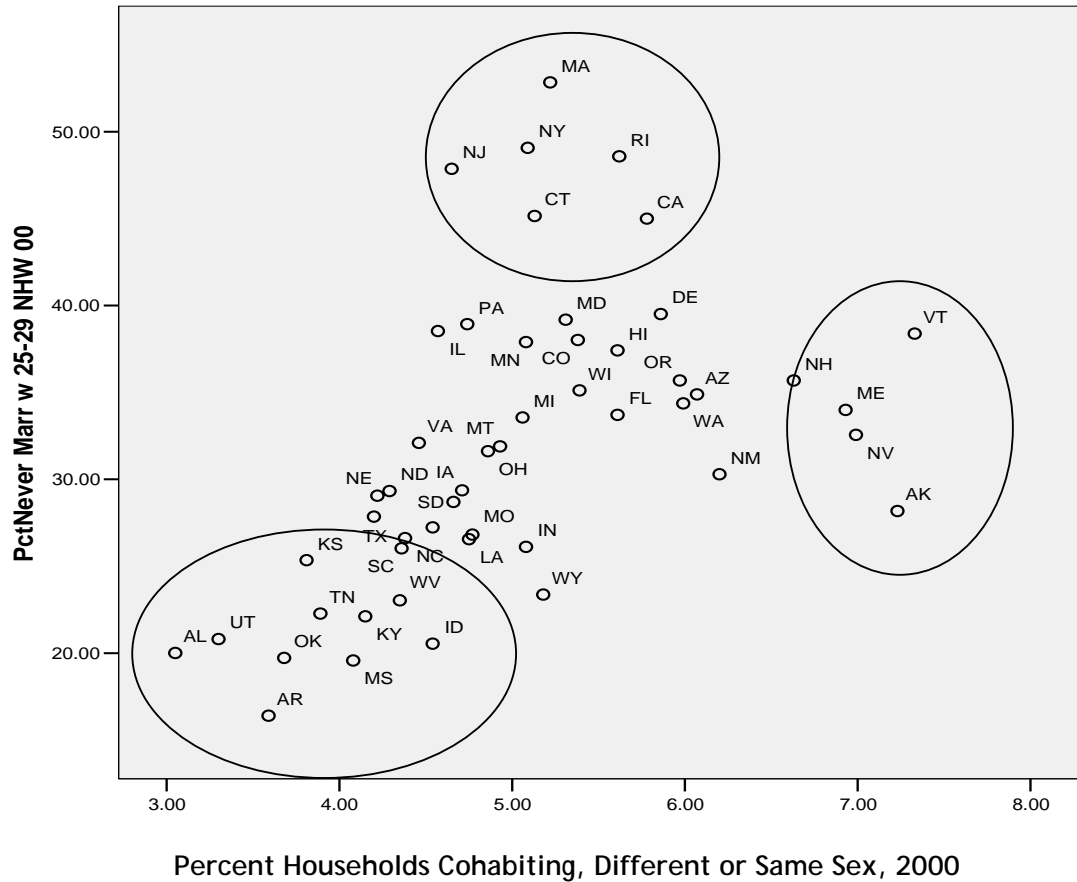
Source: US National Survey of Family Growth, 1995 as reported by R.K. Raley, 2000, p.27, fig 2.5.

From these figures it is clear that not only the age at first marriage was rising, but also that the spread of cohabitation was largely responsible for this. In other words, the US is hardly an exception in this respect and exhibits a trend similar to Europe's since the 1970s.

However, as in the EU (from Sweden to Greece), the US overall pattern hides very large spatial differentials. The degree of heterogeneity can be appreciated from Figure 2, where a plot is presented of the 50 states according to an indicator of marriage postponement and an indicator of the incidence of cohabitation. More precisely, marriage postponement is measured via the proportion of women aged 25-29 never married as recorded in the US Census of 2000, and cohabitation as the percentage of all households headed by unrelated adults of the same or of a different sex. Obviously, the positive relationship between the two indicators shows up ( $r = .51$ ), but the main purpose of the figure is to highlight the position of the various states in this typical SDT two-dimensional space of marriage being postponed or declining in favor of cohabitation. The plot reveals the existence of several clusters with more distinct patterns (circles are just hand-drawn):

1. There is a *pattern of early marriage and little cohabitation*. A large part of the South fits this picture, with states ranging from West Virginia, Tennessee, Kentucky and the Carolinas to Alabama, Mississippi, Oklahoma, Arkansas and Texas. But also Utah and Idaho have less than a quarter of non-Hispanic white women never married in the age group considered, in combination with less than 5 percent of households headed by cohabitants.
2. At the other end, a first contrasting group is characterized by *very late first marriage and medium levels of cohabitation*, and it is made up of several northeastern states (New York, Massachusetts, Rhode Island, New Jersey, Connecticut) and California.
3. And a second contrasting one combines a *high incidence of cohabitation with intermediate proportions never married women 25-29*. This group contains the rest of New England, but also Nevada and Alaska. Evidently, the states in group 3 have a higher proportion of younger adults in a union (either marriage or cohabitation) than group 2.

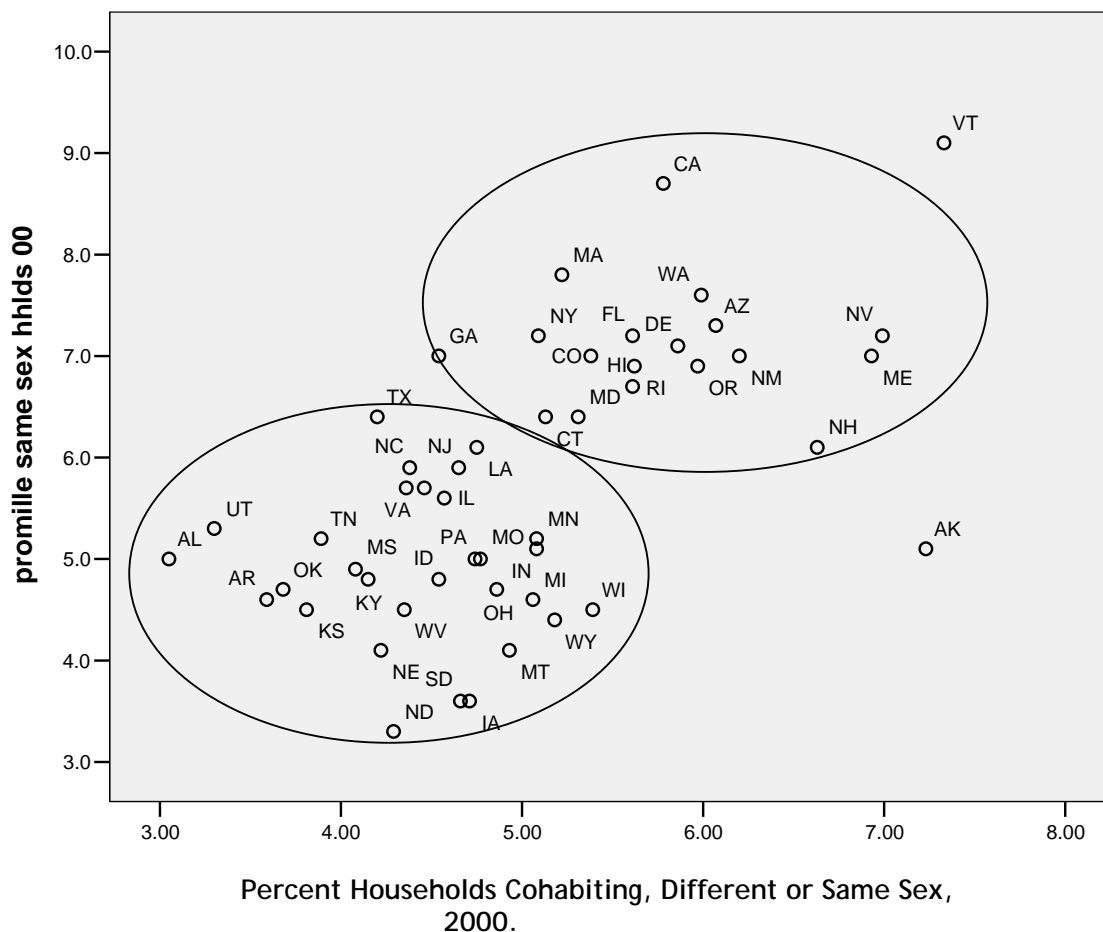
**Figure 2: Location of states with respect to the postponement of marriage (Y-axis) and the incidence of cohabitation (X-axis): 2000**



Source: Census of Population and Housing, SF1 files: 2000.

A similar picture can also be presented with respect to same sex households. This is done in Figure 3. Note, however that the incidence of cohabitation in general is expressed as a percentage of all households, whereas that of same sex cohabitation in pro mille: needless to say, same sex cohabitation is still a very exceptional feature, and taking it as the cause of general low fertility, as some conservative publicists suggest (e.g. M. Gallagher, Universal Press Syndicate, March 6, 2006), is not a plausible proposal.

**Figure 3: Location of states with respect to the incidence of same sex cohabitation (Y-axis) and all forms of cohabitation (X-axis): 2000**



Source: Census of Population and Housing, SF1 files: 2000.

The plot in Figure 3 clearly indicates that there is again a correlation ( $r = .60$ ) between the incidence of same sex and of overall cohabitation. But, as in the previous figure, there is still quite a bit of variation left. The striking feature of the plot is the existence of two clusters of states that are more differentiated by the incidence of single sex households than by that of overall cohabitation. Also, among the states that have higher percentages cohabiting (e.g. more than 5 percent), some have considerably higher shares (e.g. above 7 per thousand) of same sex households than others. The “most tolerant” states with respect to both cohabitation in general and same sex cohabitation are clearly Vermont and California, followed by Massachusetts, Washington, New York, Delaware, Florida and Maine. They are very closely followed by a few others such as Colorado, Oregon, New Mexico and Hawaii. At the other extreme are states with a low incidence of both same sex and overall cohabitation, but there is no systematic southern cluster. Instead, the low cohabitation states on both accounts are often mid-western and include the Dakotas, Iowa, Kansas, Nebraska, Montana, and Idaho, along with Ohio, West Virginia, Kentucky, Oklahoma and Arkansas.

In Europe and Canada the steady expansion of the proportions cohabiting was soon followed by the emergence of a new feature: procreation within cohabitation or parenthood without converting the cohabiting union into a marriage. In countries



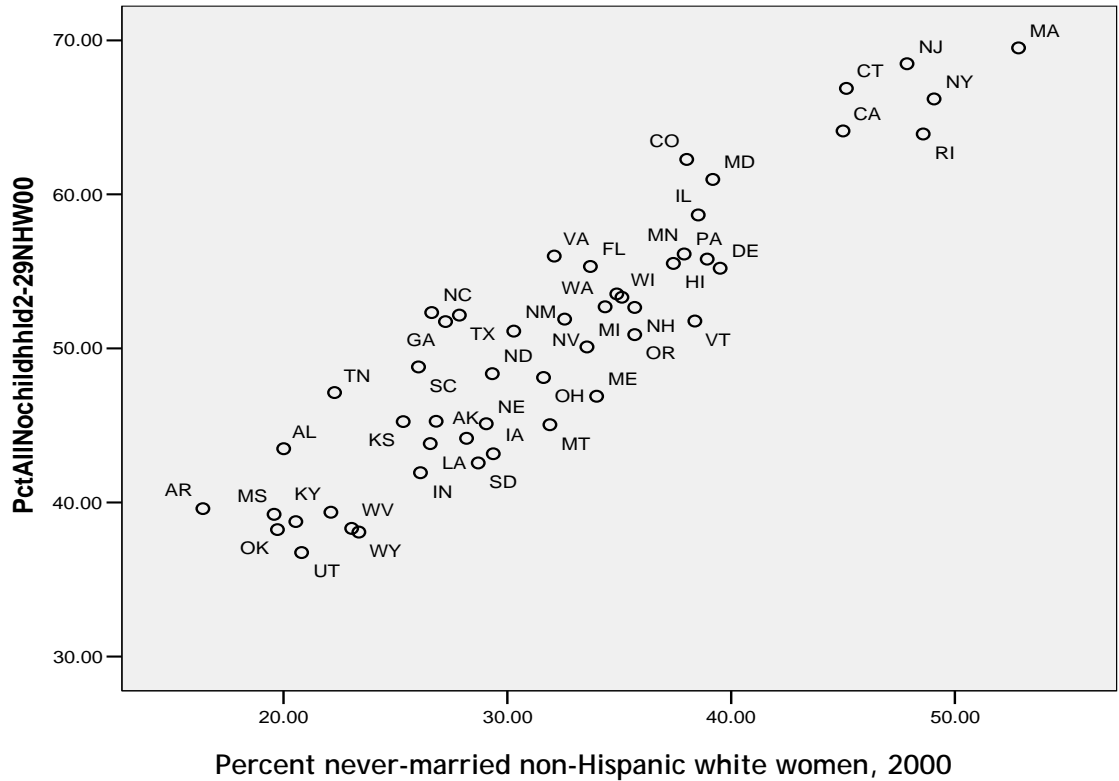
with low teenage non-marital fertility, the trend of within cohabitation fertility can fairly well be documented by the overall increase in out of wedlock fertility, but in the US the matter is much more complicated and does not permit such a straightforward interpretation. The main reason for this is that the unmarried birth rate has a number of contributing components which cannot easily be separated via the current background information. For our purposes we would ideally need to know whether the birth occurred to a single mother or a cohabiting one, but there is to our knowledge no information in the vital registration on the presence of a partner in the household. Hence, in order to get an idea about a possible trend in cohabitation fertility, we have to work via indirect indications, such as the age and the ethnic affiliation of the mother. But none of that comes remotely close to a direct measurement based on information about the presence of a partner at the time of the birth.

The basic facts (see S. Ventura and C. Bachrach, 2000) are that non-marital fertility rose uninterruptedly from a low level of about 90,000 in 1940 to 1.47 million in 2003 (*Medical News Today*, Oct. 31, 2005). In terms of the share of all births, non-marital births accounted for 3.8 % in 1940 and for 35.7% in 2003. The birth rate per 1,000 unmarried women aged 15-44 rose from 7 in 1940 to 46 in 2004 (NCHS, 2005). But since the number of unmarried women has been growing rapidly (expansion of the population at risk), the non-marital birth rate 15-44 has tended to stabilize since the early 1990s. In terms of absolute numbers, a decline in non-marital births is found among teenagers but not in the older age groups. Also in terms of non-marital birth rates per 5-year age groups, there is a sustained decline since 1991 among teenagers, but not so much among the older women, including those in their thirties (S. Ventura and C. Bachrach, p. 24, NCHS, 2005, figure 1). In fact, women in the age groups 20-24 and 25-29 are the main contributors to the overall rise in numbers of non-marital births after 1994. Moreover, the decline in the share of teenagers occurs both among black and white populations, but the rises after age 20 are predominantly a white contribution (see S. Ventura and C. Bachrach, p. 19-20). This fuels the speculation that there has been a gradual shift in terms of relative contributions from teenagers remaining single to women in their twenties proceeding with reproduction within cohabitation. This is corroborated by survey data (National Survey of Families and Households 1988, and National Survey of Family Growth 1995 – see R.K. Raley, 2001: table 4) which show that the share of all births contributed by cohabiting women 15-29 rose from about 5% in the period 1970-74 to 12% in 1990-94, and that of single women 15-29 rose from 13% to 23%. Evidently the share of births among married women then declined from 82% to 65% over the same period. Also an *increasing* proportion of singles decided to cohabit before the child's birth, and a *decreasing* proportion of cohabiters converted their union into marriage before that birth (J.A. Seltzer, 2000, R.K. Raley, 2001). These survey figures document the trend prior to 1995, and no such a clear decomposition is available for subsequent years. But the bottom line is that, despite the lack of such a finer decomposition, all indications point in the direction of both a greater incidence and a greater acceptability of procreation within cohabitation in the US as well.

A third, and major component of the SDT is the postponement of parenthood and the development of a late fertility schedule. The degree of postponement can be documented easily via the proportions of women never married in the age group 25-

29 or 30-34 and via the proportions that are still childless by these ages. In Figure 4 those percentages found in the census of 2000 by state are shown for non-Hispanic white women aged 25-29.

**Figure 4: Location of states with respect to percentages never married (X-axis) and childless (Y-axis) among non-Hispanic white women 25 to 29: 2000**



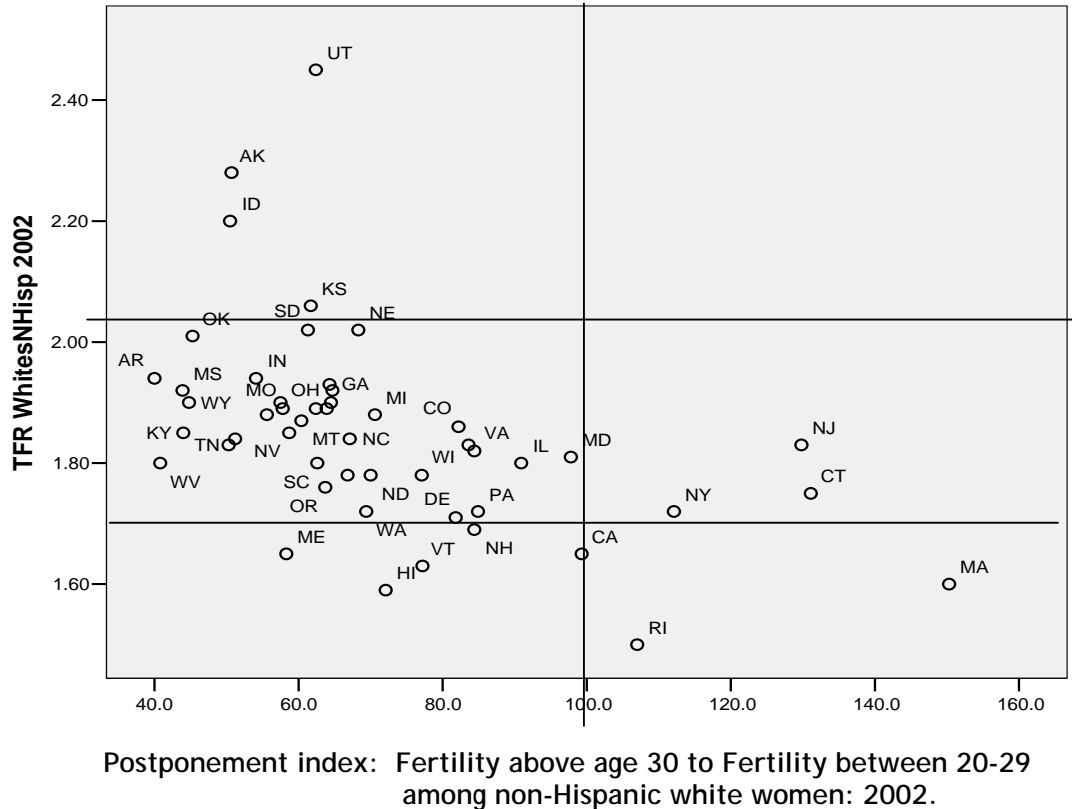
Source: Census of Population and Housing, SF1 and PUMS files: 2000

There is of course a strong positive correlation between these postponement indicators ( $r = .92$ ), but the scatterplot mainly shows the spatial pattern of the unfolding of the SDT. The vanguard in the US with respect to postponement is once again made up of Massachusetts, New Jersey, New York, Connecticut, Rhode Island and California. In these six states, about half of the non-Hispanic white women are not yet married, and more than 60 percent have not made it yet to parenthood. At the other extreme, there is a group of states where less than a quarter of non-Hispanic white women are still single and less than 40 percent still childless. This group is composed of West Virginia, Kentucky, Oklahoma, Mississippi, Arkansas, Utah and Wyoming.

The postponement of fertility is also associated with well below replacement fertility, as is shown in Figure 5. Here we have made use of the non-Hispanic white total fertility rate for 2002 and an index of fertility postponement for these women at the same date (data in Sutton and Mathews, National Vital Statistics Report, 2004, vol. 52, no. 9). The latter index is the ratio of the sum of the age specific fertility rates above age 30 over the sum of these rates between 20 and 29. In this index, teenage fertility is

left out since this constitutes an entirely different issue and a variable with another sociological connotation.

**Figure 5: Location of states with respect to the total fertility rate (TFR) in 2002 and the index of fertility postponement in 2002: non-Hispanic white women**



Source: NCHS, 2004, vol. 52, no. 9).

First of all the figure reveals that for the non-Hispanic white population of the US, only four states have above replacement fertility (i.e. higher than 2.05 children): Utah and Idaho, Alaska and Kansas. Three come very close: Oklahoma, South Dakota and Nebraska. All of these states have early fertility schedules for non-Hispanic white women. But in many other states, an early fertility schedule (not counting teenage fertility) is not a guarantee for preventing sub-replacement fertility. For instance, Arkansas, Kentucky, West Virginia, Mississippi and Wyoming have the youngest fertility schedules in the US, but all have sub-replacement fertility among non-Hispanic white women.

Obviously, at the other end of the distribution the leading states with respect to postponement typically dip below a TFR of 1.80 (California, New York, Connecticut) and even below 1.60 (Rhode Island and Massachusetts). Evidently, these states have patterns of fertility that are completely similar to those of the western European countries. In fact, in the EU the Netherlands have for a long time held the record of fertility postponement, and the non-Hispanic white population of Connecticut and New Jersey are just as late. Massachusetts even beats the Dutch in this respect.

If we take a typical western European or Scandinavian postponement index (ratio fertility 30 and over to fertility 20-29) of about 0.80 as a benchmark and compare the US non-Hispanic white populations with the European SDT countries, then we should add a number of other states to the American trio of Massachusetts (postponement index = 150 as against 126 for the Netherlands or 107 for Sweden), Connecticut (131) and New Jersey (130). These extra states would be: New York (112), Rhode Island (107), California (99), Maryland (98), Illinois (91) Minnesota (84), New Hampshire (84), and Delaware (81). In these instances fertility after age 30 would be 80% or more of that between ages 20 and 29. At the other end of the distribution the lowest postponement indices in the non-Hispanic white populations of the US are for Arkansas (40), Mississippi (41), West Virginia (41), Kentucky (45), Wyoming (45), Oklahoma (45), Tennessee (50), Alaska (51), Idaho (51) and Alabama (51). Moreover, teenage fertility in Arkansas, for instance, is higher than all fertility over age 35.

From this section it is evident that the demographic map of the US with respect to patterns of family formation exhibits very strong contrasts. A very sizable portion of the US non-Hispanic white population exhibits all the typical SDT characteristics, whereas another major segment of it shows few signs of this new demographic pattern.

### 3.3.Spatial patterns of family formation: dimensions and correlates at the state level.

In this section we intend to give a more complete analysis of the spatial dimensions of the US patterns of reproduction and their socio-economic and cultural or political correlates. For this purpose we have enlarged the set of demographic indicators to include other variables pertaining to teenage and non-marital fertility, incidence of abortion, divorce rates, and household composition indicators measured at the level of the 50 states. As a rule of thumb, we have also chosen two different indicators to capture a particular phenomenon in order to minimize idiosyncratic indicator effects. For instance, the incidence of abortion is measured once per 1,000 live births and once per 1,000 women aged 15-44. Similarly, fertility postponement is indicated by the vital statistics based postponement ratio (previously described) and by the census based percentage of women still being childless at ages 25-29 or 30-34. In the current analysis, 19 such demographic indicators are used, and they essentially contain two distinct dimensions in the patterning of US family formation. These two dimensions emerged very clearly from a classic Principle Component Analysis (PCA), followed by a Varimax orthogonal factor rotation. Together the two factors explain 67.3 percent of the total variance contained in the 19 indicators. The definitions of the variables and the respective factor loadings are presented in Table 3 below. The variables are ordered by absolute value of factor loadings on factor 1.

Table 3: Demographic indicators and their two underlying dimensions: definitions and factor loadings (50 states).

<i>Loading = correlation with:</i>	<i>Factor1 SDT</i>	<i>Factor 2</i>
• % non-Hisp white women 25-29 without children in household, 2000	<b>.933</b>	-.186
• % non-Hisp white women never married, 2000	<b>.905</b>	-.370
• % non-Hisp white ever married women without own children in household, 2000	<b>.902</b>	-.097
• Abortions per 1000 live births, 1992	<b>.887</b>	.057
• % non-Hisp white women 30-34 never married, 2000	<b>.882</b>	-.326
• Abortion rate per 1000 women 15-44, 1996	<b>.836</b>	.136
• Fertility postponement ratio (fert.30+ / fert.20-29), 2002	<b>.794</b>	-.411
• Same sex households per 1000 households, 2000	<b>.754</b>	.191
• Non-Hisp white total fertility rate, 2002	<b>-.725</b>	.009
• Non-Hisp. white fertility rate 15-19, 2002	<b>-.675</b>	<b>.633</b>
• % households that are "families", 1990	<b>-.642</b>	.328
• % households with same or different sex cohabitators, 2000	<b>.517</b>	-.148
• Divorce rate per 1000 population, 1990	-.457	<b>.548</b>
• Total fertility rate, all races, 2002	.338	-.155
• % non-marital births, 1990	.329	<b>.803</b>
• % teen births, 1986	-.303	<b>.875</b>
• Divorce rate per 1000 population, 1962	-.277	.462
• % population 30+ living with and responsible for grandchildren, 2000	-.189	<b>.886</b>
• % non-marital births, 2000	.182	<b>.851</b>

Factor loadings > .50 in bold.

The first principle component is mainly identified by all the postponement indicators of both marriage and parenthood among non-Hispanic whites, the higher incidence of abortion, the non-conventional household types based on cohabitation, and by lower overall fertility levels. In other words, the first principle component clearly identifies the emergence of the SDT in the 50 states.

A typical American feature compared to the western European pattern, however, is that divorce rates in the US are not positively correlated with this SDT dimension. Apparently, the very early rises in American divorce rates from the late 1940s onward created a different spatial pattern, which is not related to that of the current SDT. This feature is also related to the fact that Catholic states rather than Protestant ones kept low divorce rates in the US. But the bottom line here is that the early divorce maps do not predict the later SDT ones in the US, whereas they do in several EU countries (R. Lesthaeghe and K. Neels, 2002).

The other principle component (uncorrelated to the first one) is identified by high teenage fertility, including that of non-Hispanic whites, high fertility out of wedlock, and the emergence of households where not the parents but the grandparents have become the caretakers of children. This is evidently an older dimension of early family formation in the US with unmarried teenagers or young women, black or white or Hispanic, becoming mothers, ending up as single parent households, or needing their own parents to look after their children. This factor captures the vulnerability of young mothers and their children.

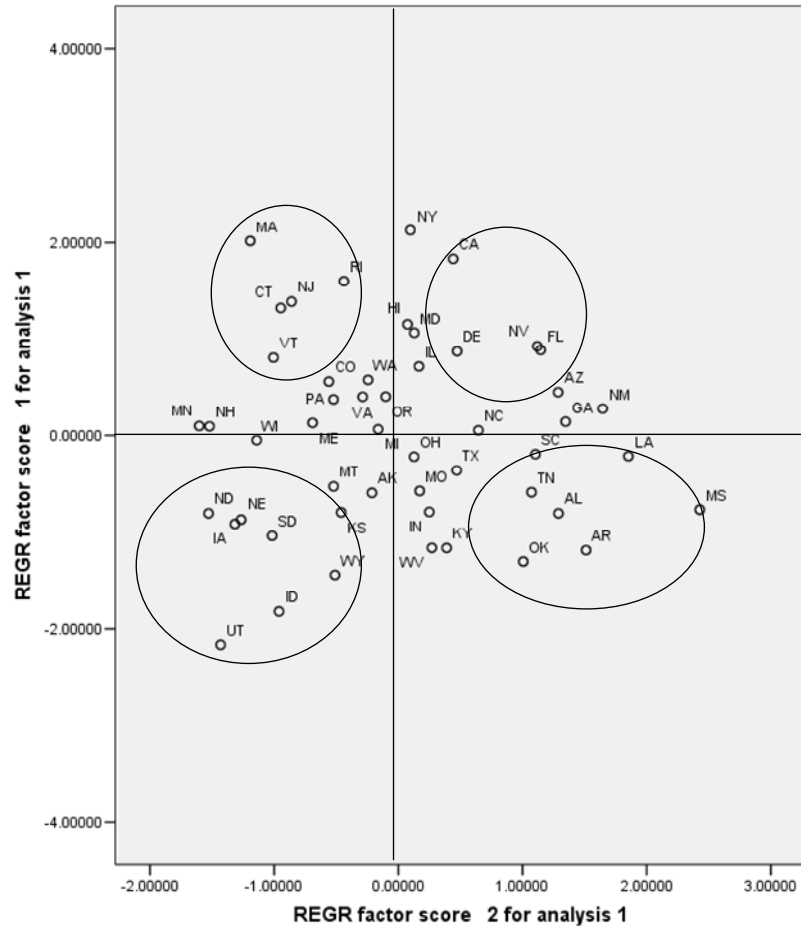
The location of the states with respect to these two dimensions of American family formation is shown in Figure 6. The four quadrants in the figure identify four contrasting types of family formation. At the bottom left are states that are resisting the SDT-features so far, but that are also conservative in the sense that they have few teenage mothers, low non-marital fertility, and hence few grandparents needing to look after grandchildren. The typical states in this cluster are the Dakotas, Nebraska, Iowa, Wyoming, Idaho and Utah. The other cluster that is resistant to the SDT so far, but has high proportions of teenage mothers, lone mothers and reliance on grandparents is located in the lower right hand corner of Figure 6. It contains typically southern states, such as South Carolina, Alabama, Mississippi, Louisiana, Tennessee, Oklahoma and Arkansas.

The states that are leading with respect to the SDT are found in the upper half of Figure 6, but they too are differentiated with respect to what happens with their children. High on SDT, but conservative re teenage motherhood are several northeastern states: Massachusetts, Vermont, Rhode Island, Connecticut and New Jersey. Also high on SDT but experiencing more early teenage fertility and lone or needy parents are California and Nevada, but also Delaware and Florida. Aside from the four “corner” types in Figure 6, there is of course the middle of the road America with average scores on both dimensions. Typical examples thereof are Michigan, Ohio, Virginia or Oregon which are all located near the center of the graph.

Figure 6: Location of states with respect to two principle components of US family formation (scales in standard deviations).

**SDT -dimension:**

**NHWites marriage  
+ fertility  
postponement,  
subreplacement  
fertility, low  
teenage fertility,  
abortion,  
cohabitation, same  
sex hhlds.**



**Older dimension :**  
high teenage and  
non marital  
fertility (also for  
NHWs),  
grandparents  
resp. for  
grandchildren,  
higher divorce.

These two basic dimensions of US family formation can be related to a series of economic (income, poverty), socio-economic (education, urbanity), political (voting) and cultural (ethnicity, religion) variables. The correlates of the two dimensions are presented in Tables 4 and 5. The left hand column repeats the correlation or factor loadings of each of the demographic indicators and the principle component, whereas the left hand column reports the best predictors of each principle components together with the correlation coefficients. These tables permit a further interpretation of the regional demographic picture of the US.

Table 4: Best indicators and correlates of the SDT-dimension, 50 US states.

Factor loadings (left) and Best correlates (right)  
PCA with Varimax rotation

• % No own child NHW women 25-29, 2000	+ .93	• % Vote Bush, 2000	-.88
• % Never married, NHW women 25-29, 2000	+ .91	• % Vote Bush, 2004	-.87
• % No own child NHW ever married 25-29	+ .90	• Disposable Personal Income, 2001	+ .70
• Abortions per 1000 live births 1992	+ .89	• % Metropolitan, 2000	+ .68
• % Never married NHW women 30-34, 2000	+ .88	• % Metropolitan, 1970	+ .65
• Abortion rate per 1000 women 15-44, 1996	+ .84	• % Catholic, 1990	+ .62
• NHW fertility postponement index, 2002	+ .79	• % Evangelical*, 2000	-.62
• % Same sex households, 2000	+ .75	• % Population 25+ with BA, 1990	+ .62
• NHW total fertility rate, 2002	-.73	• % Workers unionized, 2001	+ .50
• NHW 15-19 total fertility rate, 2002	-.68	• Disposable personal income, 1980	+ .49
• % Households "families" 1990	-.64	• % Vote Nixon 1972 (vs McGovern)	-.46
• % Cohabiting households, 2000	+ .52	• % Vote Goldwater 1964 (vs Johnson)	-.43
• Divorce rate per 1000 population, 2000	-.46		

\*NHW = Non-Hispanic whites

\*Includes Mormons in Utah

Table 5: Best indicators and correlates of the young women and children vulnerability dimension, 50 US states

Factor loadings (left) and Best correlates (right)  
PCA with Varimax rotation

• % grandparents responsible for grandchildren in households, 2000	+ .89	• % Population 25+ HS graduates, 1990	-.69
• % births to teenagers, 1986	+ .88	• % population in poverty 1998-2000	+ .66
• % births to unmarried women, 2000	+ .85	• % population black, 2000	+ .66
• % births to unmarried women, 1990	+ .80	• % population non-Hispanic white, 2000	-.61
• NHW 15-19 fertility rate, 2002	+ .63	• % Evangelical/Mormon	+ .57
• Divorce per 1000, 1990	+ .55	• % vote Goldwater 1964 (vs Johnson)	+ .54
• Divorce per 1000, 1962	+ .46	• % vote Nixon 1972 (vs McGovern)	+ .54
• NHW Fertility postponement index, 2002	-.41	• % Population 25+ with BA, 1990	-.45
		• Disposable personal income, 2001	-.43

Table 4 shows that the SDT- dimension is strongly correlated with being a wealthier state, with disposable household incomes above the US average, and with being highly urbanized and high percentages of the population living in metropolitan areas. Moreover, the SDT map also correlates positively with high proportions of Catholic populations (many not practicing) and higher proportions of adults having college degrees (BA and higher). Finally, also states with high proportions of unionized workers tend to score higher on the SDT dimension.

The SDT is clearly negatively correlated with high proportions being Evangelical Christian and with conservative Republican voting in the past, i.e. in favor of Goldwater (as opposed to Johnson) and in favor of Nixon (against McGovern). But the most



striking feature of all in Table 4 is undoubtedly the very strong negative correlation between the SDT pattern and the percentage vote for G.W. Bush (-.88 and -.87) in 2000 and 2004 respectively. The so called “blue states” are high on SDT and the “red ones” low. We shall return to this point later on in greater detail, since it is the most striking finding in this analysis.

The correlates of the teenage and unmarried mothers dimension are all too well known. These demographic features are correlated with lower average disposable incomes, lower proportions finishing high school, with higher proportions in poverty, higher proportions black or Hispanic, but also with high proportions Evangelical Christians or Mormons. America’s “Bible belt” that reacts strongly against the manifestations of the SDT also tends to be the home of poverty and low education based teenage childbearing, young lone mother families, and higher divorce rates.

#### 3.4. The SDT- Bush connection.

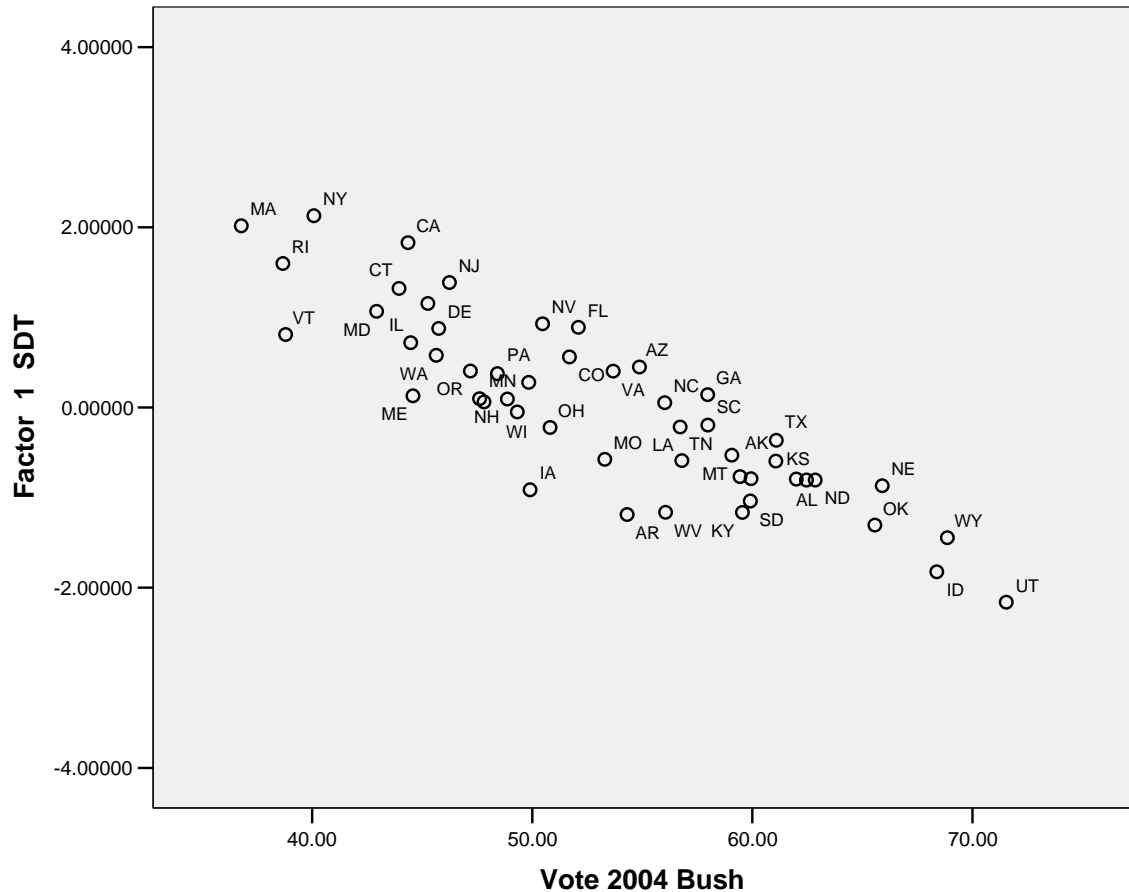
On occasion demographers have been quite successful in predicting election results, although their preoccupation goes in the opposite direction: linking demographic outcomes to cultural and political indicators. Examples are the strong relations between voting for secular parties and the speed of the fertility decline during the first demographic transition (e.g. R. Lesthaeghe and C. Wilson, 1986) or the prediction of the regional outcomes in the Italian divorce referendum of the 1970s on the basis of the timing of the same historical fertility transition 40 years earlier (M. Livi Bacci, 1977). But the very strong negative correlation found here between the SDT dimension (i.e. factor 1 in Table 3) and the percentage votes for G.W. Bush is to our knowledge one of the highest spatial correlations between demographic and voting behavior on record.

While some may have expected these correlations to be stronger in 2004 than in 2000 because the electorate seems to have been far more divided and polarized on issues in 2004, an examination of selected results from the exit polls for both elections shows that most of the ‘cultural divide’ was well-established in 2000. Of course, the controversy over the Florida vote in 2000 cemented already existing divisions. Events between 2000 and 2004 (9/11, war on terror, war in Iraq, same sex marriage amendments, etc.) and the increasingly right and left leaning news sources further contributed to the perception of a more polarized public in 2004.

It is useful to reproduce the scatterplot between the SDT values and the vote for Bush across the 50 states. Because the correlation between a state’s vote for Bush in 2000 and 2004 is .97, we will only show the results for 2004. This is presented in Figure 7. Obviously also strong correlations hold with respect to the various components of the SDT dimension. For instance, the percentage voting for Bush correlates strongly with the percentage of non-Hispanic white women never married at ages 25-29 (postponement of first marriages) ( $r = -.84$ ) or with the percentage of non-Hispanic white women 25-29 without children (fertility postponement) ( $r = -.78$ ), and even with the non-Hispanic white TFR in 2002 ( $r = +.77$ ).

Figure 7:

**Relationship between the "Second Demographic Transition" Dimension in the US 50 states and the Vote for Bush, 2004 ( $r = -.87$ )**



These findings beg the question of whether the zero-order correlations are spurious or not. More specifically, it would be dangerous to give them a direct causal interpretation, since they could be the results of a common set of other variables that causally influence both demographic behavior and voting pattern. In other words, two variables that are themselves causal results of the same determinants must of necessity be correlated. In order to check this hypothesis, a number of partial correlation tests were performed. The zero-order correlation between voting and SDT will be spurious if the partial correlations are zero or are drastically reduced. The outcomes of the test are reported in Table 6 for the correlation between the votes for Bush and the Non-Hispanic white TFR and the SDT factor as identified in Table 3.

**Table 6. Partial Correlations: Are the zero order correlations between the non-Hispanic white TFR or the SDT dimension and the vote for Bush in the 50 US States resistant to controls?**

ZERO/PARTIAL CORRELATIONS:	NHW TFR 2002		SDT factor	
	2000	2004	2000	2004
Vote for Bush in				
No controls	.771	.782	-.880	-.871
After controls for:				
A. Three structural variables: Disposable personal income 2001 % population 25+ with BA, 1990 % population metropolitan, 2000	.755	.761	-.787	-.812
B. Three structural variables + Ethnicity % black, 2000 % Hispanic, 2000	.755	.761	-.840	-.853
C. Three structural variables + Religion % Evangelical/Mormon % Catholic	.686	.686	-.734	-.742
D. Religion alone % Evangelical/Mormon % Catholic	.654	.667	-.788	-.755

The first partial correlation test is performed starting from the idea that the common causal factors producing a high zero order correlation between the demographic and the voting variables are of a structural nature, and are related to the states' average disposable household incomes, educational levels and degree of urbanization. When the three best correlates of these independent dimensions are controlled for, the partial correlation is barely reduced, and still stands well above .70. Evidently, the regional patterns related to income, education and urbanity fail to account for the Bush-SDT or the Bush-TFR correlation. We hardly do better if we add two more variables related to the ethnic composition of a state. The percentages black and the percentages Hispanic in the total population in tandem with the three structural variables fail to reduce the partial correlation. The third panel shows the results of adding two variables related to religion. These are the percentages Evangelical + Mormon and the percentages Catholic. The result is better, but the partial correlations are still in the neighborhood of .70, and hence far from zero. In fact, if we omit the three structural variables and only make use of the two religious predictors, the results are even better in reducing the Bush-white TFR partial correlation to around .65. For the Bush-SDT correlation, the best result is achieved by leaving in the three structural predictors (-.73 or -.74).

The conclusion we draw from the results shown in Table 6 is that the zero order correlation between the SDT variables and the voting for Bush cannot be considered as spurious or as the mere outcome of the operation of the common causal determinants used here. The control variables simply fail to reduce the zero order correlation coefficients to a significant extent to warrant such a conclusion. And since the demographic picture was unfolding well before the 2000 and 2004 elections, this leaves us with no alternative other than temporarily accepting the hypothesis that the spatial pattern of the SDT in the US was a non-redundant co-determinant of the red, purple and blue voting outcomes at the level of states. But

states are very heterogeneous too. And hence we need to check the outcomes at the level of counties before we formulate more final conclusions.

### 3.5. Does it all hold at the county level ?

Obviously, correlations coefficients can turn out to be considerably weaker if we examine relationships among all 3141 counties in the US. Political scientists may only be interested in the relationship at the state level as only the state vote is important for presidential elections. However, our earlier findings will be far more robust if we can show that the relationships hold across counties in the US and within its regions too. To this effect, a much larger data file was constructed, with multiple indicators for degree of urbanity, material wealth and poverty, female and overall education, ethnic composition, and religious affinity. In addition, the demographic variables were constructed for non-Hispanic whites wherever possible. In a number of instances, some measures are based on older data (1988), which allows us to capture the geographic pattern of a feature as it was unfolding at earlier stages.

Just as in the analysis with the 50 states, very similar factors emerge as underlying demographic dimensions for the 3141 counties. As can be appreciated from the results presented in Table 7, there is a clear SDT factor which strongly correlates with the indicators of marriage and parenthood postponement and with the indicators of households formed on the basis of unmarried cohabitation. Note that *negative* correlates of the SDT factor are teenage fertility and the TFR, which of course incorporates this early fertility level in its calculation. On the other hand, there is an uncorrelated second factor which again loads strongly on teenage fertility, divorce, female headed households, children growing up with grandparents and in households other than that of a married couple. The second factor is again indicative of the degree of vulnerability of young women and children.

Table 7: Demographic indicators and their two underlying dimensions: 3141 counties \*

Item	factor 1 (SDT)	factor 2
% never married females, 25-29 [WNH]	<b>.837</b>	-.018
% age at first birth= 28+ in 1988 [WNH]	<b>.812</b>	-.293
Mean age at first birth in 1988 [WNH]	<b>.792</b>	-.410
% childless women, 25-29 [WNH]	<b>.787</b>	-.091
% never married females, 30-34 [WNH]	<b>.780</b>	.074
Fertility postponement ratio, 1988 - 30+/20-29 [WNH]	<b>.733</b>	-.329
% cohabiting households [WNH]	<b>.652</b>	.284
% cohabiting households [Total]	<b>.606</b>	.461
% teen births, 1988 [WNH]	<b>-.556</b>	<b>.613</b>
% same sex cohabiting households [Total]	<b>.517</b>	.364
Total Fertility Rate, 1999 [WNH]	<b>-.503</b>	-.143
% same sex cohabiting households [WNH]	.495	.263

% pop 30+ living with and responsible for grandchildren [WNH]	-.449	<b>.646</b>
% pop 30+ living with grandchildren [WNH]	-.318	<b>.699</b>
% children living in married couple family [WNH]	-.273	<b>-.609</b>
% children living in married couple family [Total]	-.245	<b>-.746</b>
% pop 30+ living with and responsible for grandchildren [Total]	-.227	<b>.641</b>
% unmarried births, 1988 [WNH]	.164	<b>.479</b>
% currently divorced women, 35-44 [WNH]	.127	<b>.530</b>
% pop 30+ living with grandchildren [Total]	-.101	<b>.657</b>
% female-headed families/households [Total]	.069	<b>.706</b>
% female-headed families/households [WNH]	.031	<b>.649</b>

\* WNH= white non-Hispanic; date is 2000 unless otherwise specified.

It should also be noted that the overall SDT-factor itself can be decomposed in (i) a “postponement” component, indicative of late marriage and especially late fertility, and (ii) a “cohabitation” component. However if the two separate components are constructed for the 3141 counties, they still correlate at the 0.69 level. This is worth mentioning, since in several European countries these two SDT components, postponement and cohabitation respectively, do not correlate that strongly, either over time or spatially. In this respect, the stronger spatial correlation between these SDT components in the US makes the country more of a textbook example than an exception.

Table 8 shows the results of partial correlation tests of the robustness of the zero order relationship between the spatial SDT pattern and election results (2004).

**Table 8: Zero order correlation between the percent voting for Bush 2004 and the SDT dimension, and partial correlations after controls for structural and cultural variables (all counties and counties with at least 25,000 inhabitants).**

	<b>All counties</b>	<b>No small counties</b>
<b>Zero order correlation Vote Bush – SDT factor</b>	-.568	-.667
<b>Partial correlations after controls for:</b>		
<b>3 structural variables:</b>		
<i>Log population density, %families with incomes of \$75,000+, and %women 25+ with professional degrees</i>	-.453	-.552
<b>Same 3 structural + 2 ethnicity variables</b>		
<i>%black, %Hispanic</i>	-.541	-.618
<b>Same 3 structural + 2 religion variables</b>		
<i>% Evangelical (+Mormon), % Catholic</i>	-.346	-.398
<b>2 religion variables alone</b>	-.468	-.532

As expected, the negative correlation between the SDT factor and the Bush vote weakens as one moves from the 50 states to the 3141 counties, i.e. from  $-.88$  to  $-.57$ . But there are various reasons for this reduction in the strength of association. The classic one is that many counties have very small populations so that there is increased volatility in the measurements, and in the demographic ones in particular. Hence, we checked what would happen if the analysis were rerun only for counties with at least 25,000 inhabitants. In that instance, the zero order correlation between the SDT and the vote for Bush changes in the expected direction and is restored to  $-.67$ . This is again indicative of a strong correspondence between a detailed voting map and a SDT map.

What happens if controls are introduced for variables that are commonly considered as causal antecedents of both voting pattern and of demographic household formation patterns? If the original correlation is reduced to levels close to zero after such controls, then there will be no longer a basis for considering any spatial causal relationship between SDT and voting (in either direction). If the partial is reduced but still substantially larger than zero, then the control variables are partially responsible for the original correlation, but not entirely. In that instance, there is still room for a direct causal interpretation between SDT and voting outcomes, but the effect is smaller than what a full causal interpretation of the zero order correlation would imply.

As was also done for the earlier 50 states analysis, the best predictor of voting in each set of structural groups of determinants was entered as a control variable in Table 8. For the degree of urbanity this turned out to be the logarithm of population density, for material wealth it was the percentage of families with incomes of \$75,000+, and for education the percentage of women aged 25+ with professional degrees. The other structural indicators are strongly correlated with one of these three entered here, and any additional use of multicollinear information is largely redundant and will not improve the results.

In addition to the three best structural controls also two variables are introduced that capture ethnic heterogeneity at the county level: the percentage black and the percentage Hispanic in 2000. And the same was also done to capture the religious factor: the two variables are the percentage Catholic and the percentage Evangelical or Mormon among church adherents (Glenmary files, D. Jones et al., 2002).

The results in Table 8 indicate that the control for five variables (capturing urbanity, material wealth, female education, Evangelical/Mormon, and Catholic adherence) is the most powerful in reducing the zero order correlation between the SDT and the Bush vote. The combination with the ethnic composition added to the three structural indicators is less successful. But in either column of Table 8, the smallest partial correlation is still far from zero and the best combination of control variables cannot reduce the original correlation by half. Evidently, these results still mean that we cannot discard the possibility of a direct causal effect of the county demographic pattern on the latest presidential election outcome.

The objection to this causal inference as it stands now is of course that there must be some set of controls variables for which the partial correlation will be close to zero.

But such new control variable(s) must be a good correlate of both the voting and the demographic patterns and weakly correlated with the controls already used in Tables 6 and 8. The hunting season for such non-collinear antecedents is open ....

**Table 9: Zero-order and Partial Correlations between the SDT factor and the vote for Bush according to different aggregations (county is unit of analysis)**

*Aggregations are US Regions, Divisions*  
[http://www.census.gov/geo/www/us\\_regdiv.pdf](http://www.census.gov/geo/www/us_regdiv.pdf)

Geography	N counties	Zero order	3 Struct	3 Str + 2 Ethn	3 Str + 2 Relig	2 Ethn	2 Relig
<b>United States</b>	3141	-.568	-.453	-.541	-.346	-.600	-.468
<b>Region</b>							
NorthEast	217	-.803	-.729	-.725	-.635	-.739	-.684
Midwest	1055	-.605	-.518	-.506	-.454	-.557	-.570
South	1424	-.415	-.365	-.380	-.243	-.364	-.288
West	445	-.773	-.639	-.646	-.513	-.760	-.681
<b>Division</b>							
NwEngland	67	-.700	-.482	-.461	-.414	-.629	-.665
Mid Atlant	150	-.790	-.552	-.494	-.442	-.601	-.680
ENCentr	437	-.606	-.616	-.608	-.525	-.537	-.523
WNCentr	618	-.572	-.462	-.442	-.395	-.542	-.549
South Atl	590	-.510	-.406	-.500	-.339	-.569	-.455
ESCentr	364	-.252	-.287	-.347	-.247	-.168	-.185
WSCentr	470	-.284	-.286	-.234	-.162	-.167	-.147
Mountns	280	-.750	-.592	-.598	-.469	-.740	-.661
Pacific	165	-.733	-.636	-.625	-.582	-.700	-.742

But aside from the effect of volatility of several measures for counties with small populations, there is another reason for the reduction of the SDT-Voting correlation when 3141 counties are considered instead of the 50 states. This reason emerges in Table 9, where the analysis has been run separately for the counties within the four census regions and nine census divisions in the United States. It appears that the national correlations, both zero order and partials, are pulled down by weak relations for the South, and particularly for the two South Central divisions. By contrast, the zero order and partials remain very high for the counties in New England and the Mid Atlantic states and in the Mountains and Pacific ones. Hence, it appears that the southern voting patterns may still be conditioned by powerful determinants other than those connected to the unfolding of the SDT, such as the persistence of older ethnically or social class based political antagonisms. More specifically, the counties of the old cotton belt, with a majority black population, and the Texan counties along the Rio Grande with large Hispanic populations all vote overwhelmingly for the Democrats but score low on the SDT dimension, as could be expected.

### 3.6. The RWA-paradigm and the US spatial SDT pattern

In section 3.1 we showed that transitions among individuals depend on the shift of the distribution of the  $MIN_i$  scores, i.e. the lowest score of the three  $R_i$ ,  $W_i$ , or  $A_i$ . In this section, the units of analysis are no longer individuals, but spatial entities. This means that we have to be careful not to impute the characteristics of counties to individuals. For instance, if a spatial indicator of wealth correlates with the SDT dimension, that does NOT mean that cohabitation is more widespread among the richer population segments. It only means that it is more widespread in richer AREAS. Failing to keep that in mind would be to engage in the well know “ecological fallacy”. In fact, cohabitation could be more widespread among the poorer groups, but then poorer groups living in wealthier counties would be more prone to cohabit and postpone births than similar groups living in poorer counties. Hence, what we consider from now on are the distributions  $R_c$ ,  $W_c$ ,  $A_c$  and  $MIN_c$ , where  $c$  stands for “county”.

But the basic principles still hold: the  $MIN_c$  distribution is the one that matters, and the slowest moving condition will again have a predominant impact on the tempo of the shift in  $MIN_c$ , particularly if the lag in one condition is particularly pronounced. Moreover, as the  $MIN_c$  distribution shift to higher intensities, it is very likely that its variance increases. When populations undergo transitions in both behavior and attitudes, their distributions typically have relatively small variances at the onset and near the end of the transition, but much larger ones mid-way. In other words, during the full unfolding of a transition, the vanguard and the rear become more distinguished, or in terms of spatial units, regional leads and lags fully develop. At that point cross-sectional correlations will capture such leads and lags just beautifully. This does not of necessity imply that the mid-way distribution should become bimodal. That would only be an extreme form of polarization with one group or one set of regions having very high scores on the three conditions and another group having very low ones on at least one of the three. More plausible is that the mid-transition distribution remains bell-shaped, but more drawn out with the distance between the lowest and upper quartile being maximal.

The correlates of the spatial leads and lags are presented in Table 10 for the 3141 counties. Note that we have used the same predictors as in Tables 7, 8 and 9. Moreover, we have not only taken the SDT dimension as a dependent variable, but also the percentage vote for Bush in 2004. This sheds additional light on the resistance of the SDT-Bush zero order correlation for the sets of controls introduced in Tables 8 and 9 above. Also, at this point we will not engage in advanced spatial econometric analysis and the specification of a model capturing the dynamics of spatial autocorrelation. This is a piece of research in its own right and not really essential at this stage. Finally, the analysis has again been disaggregated for 4 major regions since we now know that the southern pattern (region 3) is different for the Bush-SDT correlation (see Table 9) which weakens the national outcome as well.



**Table 10.**


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**Spatial correlates of the Second Demographic Transition dimension and of the Percentage vote for G.W. Bush 2004.**

Zero-order correlations, US counties, period = 2000 unless otherwise specified.

	Region 1 <b>NorthEast</b>	Region 2 <b>MidWest</b>	Region 3 <b>South</b>	Region 4 <b>West</b>	<b>US Natl.</b>
number of counties	217	1055	1424	445	3141
<b>Second Demographic Transition (SDT) dimension dependent.</b>					
Pct households income \$ 75,000+	0.676	0.598	0.682	0.658	0.656
Pct women with professional degrees	0.813	0.502	0.661	0.654	0.637
Log. Population density	0.496	0.64	0.527	0.253	0.512
Pct Black	0.461	0.387	0.214	0.285	0.064
Pct Hispanic	0.515	0.071	-0.017	0.132	0.013
Pct Evangelical or Mormon 2002	-0.581	-0.385	-0.549	-0.539	-0.576
Pct Catholic 2002	0.436	0.215	0.195	0.244	0.364
Pct Vote Bush 2004	-0.803	-0.605	-0.415	-0.773	-0.568
<b>Pct vote for Bush 2004 dependent</b>					
Pct households income \$ 75,000+	-0.414	-0.224	-0.133	-0.496	-0.278
Pct women with professional degrees	-0.591	-0.224	-0.303	-0.558	-0.378
Log Population density	-0.448	-0.459	-0.165	-0.443	-0.367
Pct Black	-0.48	-0.328	-0.577	-0.302	-0.351
Pct Hispanic	-0.441	0.089	0.079	-0.298	-0.009
Pct Evangelical or Mormon 2002	0.584	0.254	0.354	0.566	0.375
Pct Catholic 2002	-0.454	-0.101	0.001	-0.383	-0.179
SDT -dimension	-0.803	-0.605	-0.415	-0.773	-0.568

---

In the top portion of Table 10 the spatial correlates of the SDT demographic dimension (postponement & cohabitation) are brought together, whereas the bottom part assembles the correlates of the spatial distribution of the vote for Bush. In regions 1, 2 and 4, the 2004 election results are either the best or the second best (negative) correlate of the SDT-dimension, and also stronger than the correlation with percentages Evangelical or Mormon. But it is quite clear that the rear of the SDT distribution is made up of counties with a cultural objection to the new forms of demographic behavior. By contrast, in all regions, including the South, the positive correlations between the SDT and the indicators of urbanity, wealth and education are clearly in evidence. They identify the counties that are in the lead. Note, however, that there is a slight to moderate negative correlation between percentages Evangelical/Mormon and the three

“structural” variables, indicating that the cultural reaction to SDT also tends to be a more rural response in poorer counties and with lower education.

The bottom part of Table 10 shows why the SDT-Bush correlation is so robust for controls. In regions 1, 2 and 4, the SDT is very clearly the best correlate of the vote for Bush, and by quite a margin. The structural and other cultural characteristics of the counties produce correlations in the expected direction, but do not nearly capture the geography of the election results as neatly as the SDT-dimension does. In region 3 (South), i.e. the most deviant one, it is still the percentage Black that is the best (negative) correlate, but the SDT dimension comes as the next best one, ahead of the indicators of wealth, urbanity of education. All of this is again consistent with the hypothesis that the presidential elections of 2004 (and 2000) have been influenced in a *non-negligible way* by the shift in the American population towards new forms of demographic behavior and the “moral” debates that accompany it.

#### **4. Value Orientations and Life Course Choices: the Footprints at the Micro Level.**

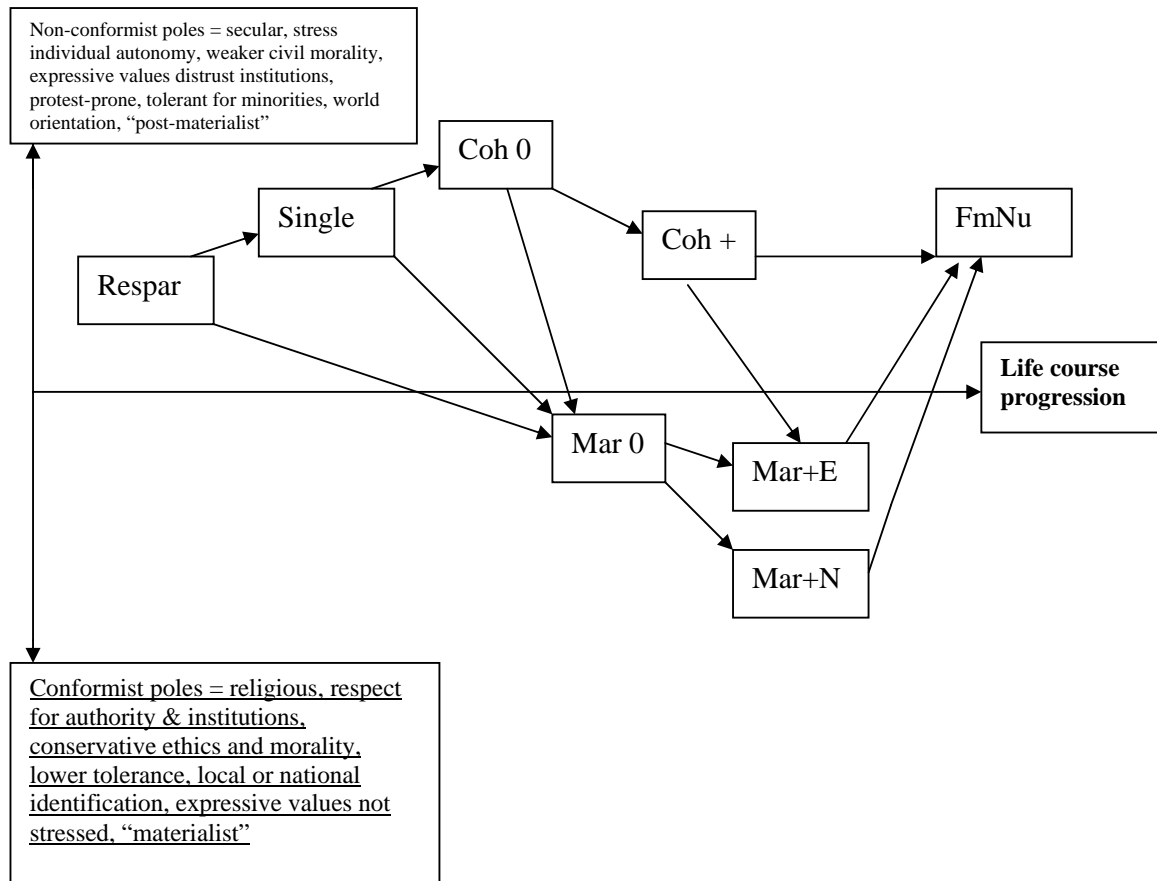
The initial article on the SDT (Lesthaeghe and vande Kaa, 1986) posited that the new living arrangements and cohabitation in particular were the expressions of secular and anti-authoritarian sentiments of better educated younger cohorts with a more egalitarian world view, and who also put greater emphasis on the “higher order needs”. At the same time the correlates of Inglehart’s “post-materialist” orientation were high on the research agenda of the political scientists, and both the Eurobarometer surveys in the EU and the first round of European Values Studies (EVS) of 1981 provided data for more detailed empirical research on attitude and value profiles for various social groups, including those based on living arrangements. Also in the US statistical associations between living arrangements and specific value orientations drew attention. Not only was it realized that cohorts were steadily progressing to higher levels of “post-materialism” (Inglehart, 1985) and other higher order needs (e.g. van Ryssel, 1989), but also that there was a recursive relationship between demographic choices and values orientation. As Thornton and colleagues in Michigan illustrated (1985, 1987, 1992), higher secularism fostered choices in favor of premarital sex and non-traditional household formation patterns, but the latter also reinforced further secularization. In other words, there was a *selection* into various types of behavior based on existing values to start with, and then an *affirmation* or strengthening of these values based on the behavioral choice. Clearly, the statistical associations between value orientations and the various types of households are merely the “*footprints*” of this ongoing life course process of selection followed by affirmation or negation of values. On the basis of successive cross-sections we cannot disentangle the two directions of causation involved. American social scientist took the lead in organizing panel surveys, and it is mainly on the basis of these that the recursive model of selection/adaptation could be checked (e.g. Waite, Kobrin and Witsberger, 1986, Axinn and Thornton, 1993, Barber, 1998, Clarkberg, 2002). More recently, also a few European panels measure various value orientations at successive waves, and they too now lend themselves to disentangling the causal components of the recursive relationship (e.g. Moors, 1997, Jansen and Kalmijn, 2002).

##### **4.1. The cross-sectional “footprints” of the recursive selection and adaptation model.**

On the whole, there are now many documented effects of values as they influence choices with respect to family formation (*selection effect*), and of the ways in which the life course choices feed back onto value orientations, either to reinforce or to alter them (*adaptation effect*) (see Lesthaeghe, 2002). The overall picture of the process is given in Figure 4. Firstly, on the vertical axis we have placed two poles: one brings together the non-conformist and more libertarian values (e.g. stress on individual autonomy, less respect for authority, expressive values of self-actualization, secularism, tolerance for alternative behavior and minorities, world-citizenship etc.), and the other the more conventional value orientations (e.g. respect for tradition, ethical and religious values, trust in institutions, solidarity and social cohesion). Secondly, we have put the transitions into the various household states on the horizontal axis, typifying “life course progression”. Upward arrows indicate that a particular transition in household position is associated with a move in the non-conformist values direction, and downwardly pointing arrows indicate transitions associated with value adaptations in the conformist sense. This leads to the positioning of the various living arrangements along this vertical axis of value orientations. This is also what we shall refer to as the cross-sectional “*footprints*” of the recursive selection/adaptation model.

At this point it should also be noted that the analysis can only be performed for de data sets belonging to the “European Values Surveys” (EVS) since retrospective questions on “ever cohabited before marriage” and “ever divorced/separated” were inserted in the 1999-2000 round. This extra information permits the disaggregation of the large category of currently married respondents into those with a premarital cohabitation or with a divorce history and those without. These extra questions were not asked in the data sets belonging to the “World Values Surveys” (WVS) and hence such necessary fine-tuning was impossible for the non-European industrialized countries (US, Canada, Australia, New Zealand, Argentina ...) where cohabitation and divorce are equally important in structuring value orientations and vice versa.

**FIGURE 8: The “footprints” model -- Flow chart of life course transitions and hypothesized changes in values orientations stemming from the selection and adaptation mechanisms.**



Respar = Resident with parents.  
 Single = Living alone or sharing, never married and not in union  
 Coh 0 = Cohabiting, no children  
 Coh + = Cohabiting with children  
 Mar 0 = Married, no children

The starting point on Figure 8 is the individuals' residence in the parental household (*Respar*). At that point, the formative years and late adolescence are approaching completion, and individuals have been subject to the "triple P"-influences (parents, peers, professors). Peer influences have gained importance over time, and also increased parental divorce pushes the value orientations of such young adults in the non-conformist direction. During the next steps in the life course unfolding, it is expected that home leaving in favor of independent single living (*Single*) is predicated on the dominance of non-conformist values, whereas leaving home and directly getting married (*Mar0*) reflects a choice based on conventional value orientations. At the same time, these two choices both reinforce the original values sets in their respective directions.

Singles face the option of moving into cohabitation (*Coh0*) or of marrying (*Mar0*). The former transition strengthens non-conformism even further, also because the cohabiting partner is also likely to be selected on the basis of non-conformist convictions. The mutually reinforcing attitudes of both partners may then enhance the consistency of various values sets, so that childless cohabitants (*Coh0*) can be expected to score highest on all non-conformist sub-dimensions associated with pole 1 on Figure 8. By contrast, singles who move immediately into marriage may do so because of a greater respect for traditional institutions or for their parents' opinions, or because they choose a partner with a more conservative outlook. Once the institution of marriage is accepted, a move to more conformism is also expected, not in the least because married couples tend to drop the old singles network in favor of new ones with other more like-minded settled couples as well. A similar process of readjustment would also apply to cohabitants who move into marriage prior to parenthood. For them, the value adjustment associated with marriage would be more substantial, given that they come from a strongly non-conformist position. However, it may also be that they never adjust to the same level of conformity as the directly married, and therefore exhibit a *life-long non-conformist imprint* dating back to their earlier cohabitation period. Whenever possible, we shall therefore make a distinction between married couples who *ever* (*E*) and who *never* (*N*) cohabited.

The adjustment effects of parenthood are expected to be even stronger than those of marriage. In fact, values already shift in the conformist direction in anticipation of parenthood, and the transition from cohabitation into marriage is often made as such a form of anticipation. Parenthood corresponds to a firm commitment of both partners and closes open futures. And most importantly, it redirects attention to the well-being of the next generation. Moral, civil and ethical values are reaffirmed and again other social networks – of those with children – are being activated. Tolerance for deviance diminishes, authority gains greater prominence, and more attention is being paid to solidarity and social cohesion. In Figure 8, all positions with children (indicated by a + sign) are therefore located further down toward the conformist pole. But, the position of ever-cohabiting married parents (*Mar+E*) remains above that of the never-cohabiting married parents (*Mar+N*).

Finally, a separation or divorce which has not yet been followed by a new partnership (*FmNu* = formerly married, not in union) causes a complete overhaul of the value system. New doubts emerge with respect to religion, morality, authority, trust in institutions etc. The individuals are more likely to become self-focused, and therefore pay again greater attention to expressive values and self-actualization. We therefore place the *FmNu*-group further toward the non-conformist pole of Figure 8.

The household positions used in Figure 8 are incomplete, and so are the types of transitions. However, they capture the dominant streams of household formation and dissolution through the life course. The main reason for the incompleteness of positions is that surveys do not capture the more complex trajectories. They typically only record the current status, but forget to pose questions about earlier states (i.e. the “ever”-questions). In fact, only at the third round in 1999-2000 did we manage to insert the “ever-cohabited” question in the European Values Survey (EVS). In the two earlier rounds, there are large samples of married respondents, but no information whatsoever about their different household formation careers.

The overall outcome of this section is that there should be an ordering of individual household positions along the vertical axis of Figure 8. In this ordering, cohabitants without children (*Coh0*) should score highest on all non-conformist value orientations, followed by singles and formerly married (*FmNu*). Residents in parental households should come next. More toward the opposite pole are married persons without children, cohabiting parents, and married parents who ever-cohabited. Married parents who never cohabited should constitute the most conservative group.

Finally, the “footprints” scheme is important for the SDT theory for several reasons. Firstly, it connects demographic choices explicitly to a dynamic model of cultural change. In doing so, it goes much further than the neo-classic economic “adjustment for tastes” which merely recognizes static “addictions” (Becker, 1996). Secondly, empirically the “footprints” can be checked in cross-sections and for a wide variety of items. And thirdly, we can use the “footprints” to follow the SDT geographic diffusion throughout Europe, and further to other, non-European settings. The latter has become possible mainly thanks to the European and World Values Surveys. We shall now turn our attention to these empirical findings for a set of European countries.

#### 4.2. Do we find the footprints of selection and adaptation in the new SDT countries?

In this empirical section we make use of 80 attitude or value items that were used in the 1999-2000 round of the European Values Studies. In this chapter, EVS-data are used for all respondents in the age bracket 18 to 45. The items are listed in Table 11, and they are all dichotomized with the dummy score of unity given to the non-conventional or non-conformist end of the scale. Such a uniform recoding facilitates the subsequent inspection of value profiles according to household situation.

The list of table 11 contains 9 major subjects. The largest number of items (15) pertains to attitudes related to marriage as an institution, the qualities needed for the success of marriage, to the meaning of parenthood and parent-child duties, and to the degree of permissiveness with respect to sexual freedom, divorce and abortion. Secularism is covered by 9 items. They indicate the rejection of traditional beliefs (heaven, hell etc), a low level of individual religious sentiments, a low level of participation and trust in religious institutions and practices. The civil morality set, with 12 items, captures permissiveness toward various forms of deviance, but also ethical acceptance of interference in life and death (abortion, suicide). The political set of 11 items deals with distrust in institutions, protest proneness, “post-materialism”, and the rejection of authority more generally. The social distance and tolerance set is made up of 8 items, which indicate the acceptability as neighbors of various types of persons belonging to ethnic or sexual minorities. The expressive values contain both the work and the socialization batteries. The former group of 8 items indicates the preference for intrinsic work qualities over material rewards and status. The socialization items (7) show the preference for independence and imagination rather than for conformity and respect. The identification items (6) distinguish between more global and transnational interests versus national or local ones. However, a global or third world orientation is not only negatively correlated with national pride, but also with trust in international organizations. The last set of 4 items indicates a retreat from social and political life, absence of memberships or voluntary activities, a distrust in people more generally, and a lack of interest in

politics. In all further analyses, these 80 items will be used without prior data reduction, such as factor analysis. Hence, no particular structure or simplification is imposed prior to further statistical analysis.

**TABLE 11: Overview of 80 items used in the current analysis, EVS 1999-2000**

<u>Topics &amp; corresponding items</u>	<u>Item description</u>
Marriage and family: A1-A15	Marriage outdated institution (A1); children not necessary life fulfilment (A2); parents must not sacrifice for children (A3); justified: casual sex (A4), adultery (A5), divorce (A6), abortion (A7); important for marriage: tolerance & understanding (A8), sharing chores (A9), talking (A10), time together (A11), happy sexual relations (A12); not very important for success marriage: faithfulness (A13), children (A14); single motherhood acceptable (A15).
Religion: A16-A24	Not believing in: god (A16), sin (A17), hell (A18), heaven (A19); no comfort from religion (A20), no moments of prayer or meditation (A21); god not at all important in life (A22); distrust church (A23), religious faith not mentioned as socialisation trait (A24).
Civil morality: A25-A36	Justified: soft drugs (A25), homosexuality (A26), joyriding (A27), suicide (A28), euthanasia (A29), speeding (A30), drunk driving (A31), accepting bribe (A32), tax cheating (A33), lying (A34), tax evasion by paying cash (A35), claiming unentitled state benefits (A36).
Politics: B1-B11	Distrust in institutions: education system (B1), army (B2), police (B3), justice system (B4), civil service (B5); participated or willing to participate in: unofficial strikes (B6), attending unlawful demonstrations (B7), joining boycotts (B8), occupying buildings (B9); not more respect for authority (B10); post-materialist (B11).
Identification: B12-B17	Identification with "Europe and World" (B12), not with "own village or town" (B13), not very or quite proud with own nationality (B14); no priority for national workers (B15); no trust EU (B16) or UN (B17).
Retreat: B18-B21	Not member any voluntary organisation (B18); no voluntary work (B19); people cannot be trusted (B20); never discuss politics (B21).
Socialisation: C1-C7	Not mentioned as desirable trait in educating children: hard work (C1), obedience (C2), good manners (C3), unselfishness (C4), tolerance & respect (C5); stressed as desirable: independence (C6), imagination (C7).
Work qualities: C8-C15	Not mentioned as desirable job aspect: good hours (C8), promotion (C9); stressed as desirable: respected job (C10), responsible job (C11), meeting people (C12), useful for society (C13), interesting work (C14), enabling initiative (C15).
Social distance: C16-C23	Not wanted as neighbours: large families (C16), right wing people (C17); no objection to have as neighbours: aids patients (C18), unstable people (C19), criminal record (C20), drug addicts (C21), homosexuals (C22), immigrants (western countries) or gypsies (central European countries) (C23).

Note: all items have been coded in the "non-conformist" direction.

At this point the value profiles can be established according to the various household positions used in the "footprints" diagram. The profiles that are being displayed here are "net" ones, i.e. they are those of the 8 household positions remaining after controls

for age and age squared (continuous), gender (2 categories), education (4), profession and occupation (9 categories, including separate ones for “students”, “unemployed” and “housewives”), and urbanization (2). The controls themselves were performed through Multiple Classification Analysis, and the outcomes take the form of net household types deviations from the overall mean (here: overall percentage with the given attitude). Such net “household-profiles” of deviations are computed for all 80 items. Subsequently a first simple tally of the number of net *positive* deviations, i.e. in the non-conformist direction, can be produced for each household position. Such a tally is already highly revealing of the overall non-conformism profile and of the “footprints” of the selection/adaptation process.

The outcomes are displayed in Figures 9 and 10. Figure 9 gives the number of net positive deviations in the non-conformist direction for the 80 items and the 8 household positions for major groups of countries (respondents aged 18-45). Scandinavia-2 is made up of Sweden and Denmark, West-3 consists of Belgium, France and Germany, South-2 contains Spain and Portugal (not yet enough cohabitants in 1999 in the sample of other Mediterranean countries), Central-7 comprises Croatia, Slovenia, Slovak Republic, Czech Republic, Hungary, Poland and Lithuania, and East-5, finally, is composed of Belarus, Ukraine, Russian Federation, Romania and Bulgaria.

**FIGURE 9: Number of net deviations in non-conformist direction for 80 items according to household position; 1999 EVS results for respondents age 18-45 and for five groups of European countries after controls for other covariates (age, age squared, sex, education, economic activity and urbanity).**



Chart 7.1: Number of positive net deviations (=non-conformist) for 80 items according to household position; 1999 EVS results for five groups of European countries after control for other covariates.

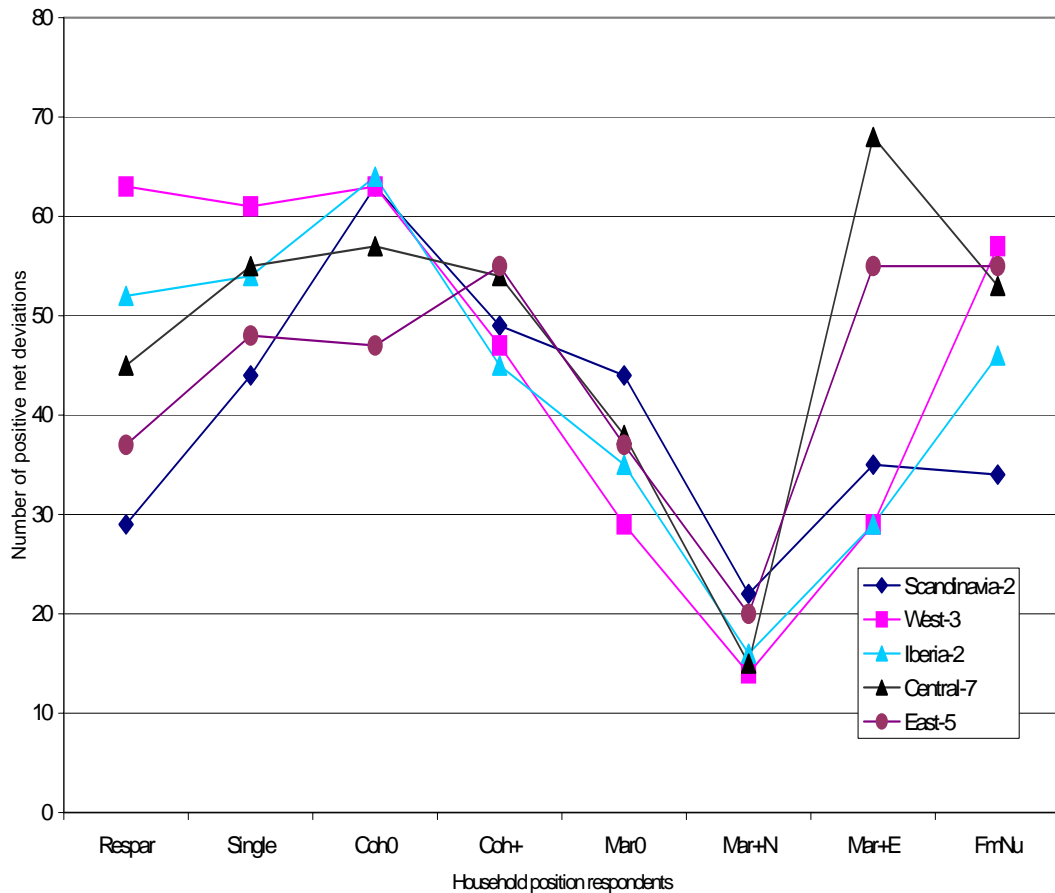


Figure 5 immediately shows that the “footprints” are found in *all* these major regions of Europe, including the “old SDT” countries like Sweden and Denmark as well as in the “SDT-newcomers” of Southern, Central and Eastern Europe. The five profiles are also remarkably similar:

- Cohabitants without children (*Coh0*) indeed tend to exhibit the most non-conformist values profile of all;
- marriage and parenthood are associated with major readjustments in the conventional and conformist direction;
- married parents who never cohabited (*Mar+N*) display by far the most conservative attitudes on all dimensions involved;
- the earlier cohabitation experience indeed appears to leave a more permanent imprint in the non-conformist direction, even after marriage and parenthood had been achieved (compare *Mar+E* to *Mar+N*);
- and also divorce (*FmNu*) produces a move away from the stability of conventional opinions held by married parents.

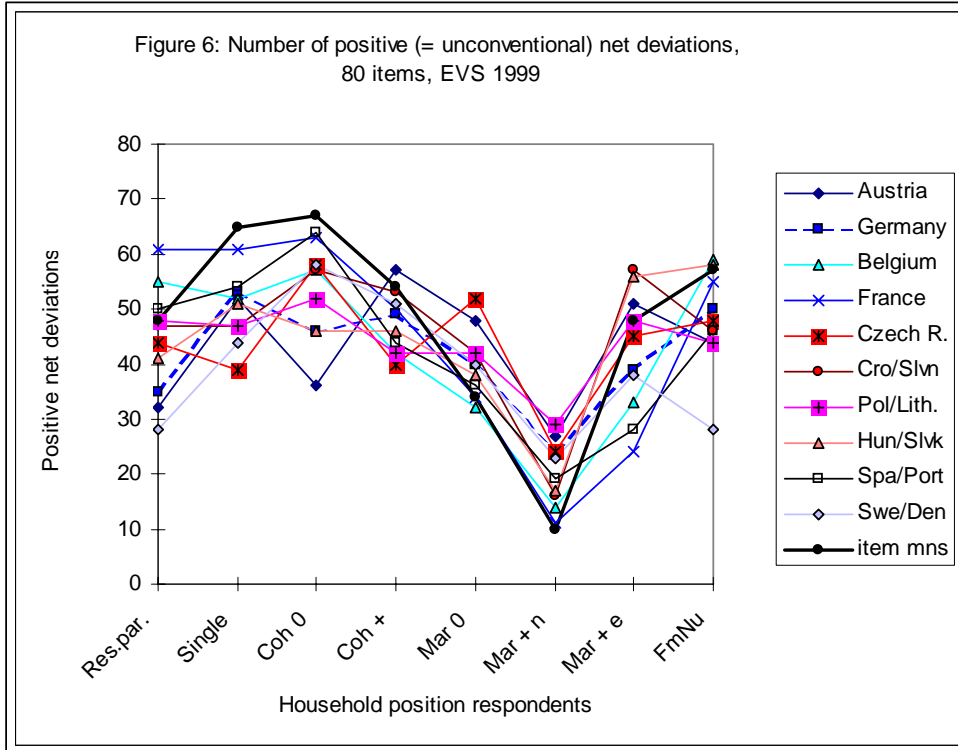
The main surprise of the exercise was that respondents who were still living in the parental home displayed a high degree of heterogeneity according to the country

grouping used here. One could expect that in the early SDT countries late home leavers are more rare and more clearly a “residual group” that is left behind as a result of more conservative values. This holds very clearly in the Scandinavian group with the smallest number of net positive deviations for the *Respar* category. But it does not hold so well for the Western group, and particularly not for France, where home-stayers have much more libertarian and non-conformist attitudes. Evidently, there are more intricate mechanisms at work here that we cannot capture with the simple and small surveys of the EVS-type.

Figure 10 provides a finer breakdown to illustrate that the “footprints” pattern still holds remarkably well for smaller geographical units (single countries or pairs of countries). Moreover, we have also calculated the means over all countries of the item net deviations according to household position, and reported the number of items for which these household-specific means were higher than the grand mean. This gives the profile indicated by “item mns” in figure 10, and the outcome is that all sample ideosyncracies are neutralized so that an even clearer profile emerges.

**Figure 10: Number of net deviations in the non-conformist direction for 80 items, respondents age 18-45, for individual countries or pairs of countries, EVS 1999, after controls for other covariates (age, age squared, sex, education, economic activity, urbanization).**

	Res.par.	Single	Coh 0	Coh +	Mar 0	Mar + n	Mar + e	FmNu
Austria	32	52	36	57	48	27	51	44
Germany	35	53	46	49	40	24	39	50
Belgium	55	52	57	42	32	14	33	59
France	61	61	63	50	34	11	24	55
Czech R.	44	39	58	40	52	24	45	48
Cro/Slvn	47	47	57	53	42	16	57	46
Pol/Lith.	48	47	52	42	42	29	48	44
Hun/Slvk	41	51	46	46	38	17	56	58
Spa/Port	50	54	64	44	36	19	28	46
Swe/Den	28	44	58	51	40	23	38	28
item mns	48	65	67	54	34	10	48	57



The bottom line is that the Central and Eastern European countries and the two Iberian ones are not in any way exceptional with respect to the dynamics that link values to choices and choices to values as hypothesized in the selection/adaptation framework. Also, earlier values and choices retain a more lasting imprint, even after the completion of other transitions later on in life. And finally, these strikingly similar profiles illustrate that the dynamics of the SDT are equally operating in the former Communist and Iberian countries as in the Western and Northern parts of Europe. These parts of Europe are squarely no longer exceptional. And, the emerging of the new SDT living arrangements in the Eastern Mediterranean will not come as a surprise either.

## **5. Conclusions**

Before formulating specific conclusions, we would like to make a major preliminary point. We do so to avoid subsequent misunderstanding about the role of “culture” in the SDT. And this point is that the SDT-theory fully recognizes the effects of macro-level structural changes and of micro-level economic calculus. Only, it does not consider these explanations as “sufficient” or “necessary”, but merely as “non-redundant”. By the same token, also cultural explanations are non-redundant, but equally insufficient. More specifically, the SDT-theory does not consider cultural change as endogenous to any economic model, but as a necessary additional force with its own exogenous effects on demographic outcomes. Also, “culture” is not treated as some form of “addiction”, nor as a fixed script, but as a dynamic set of value orientations. As such these orientations can change at the individual level and they can be linked recursively to the unfolding of the life course. And they can also change at the collective level during particular periods of time, or shift to new configurations with the succession of cohorts. Moreover, these ideational shifts can occur at very different levels of wealth, at a variety of durations of education, and at highly varied levels of economic development.

What have we tried to illustrate in this chapter?

First of all, at the descriptive grass-roots level, that it is well worth making the distinction between the features of a first and a second demographic transition (irrespective of whether one adopts the “transition” terminology or not). They are very clearly distinct phases and their outcomes are dissimilar. The SDT does not lead to a stable equilibrium, but to a “bumpy road” development of multi-ethnic entities with a much greater role to be played by migrations.

Secondly, that both demographic transitions were spurred on by forceful ideational changes as well. Moreover, not only did secularization and the subsequent accentuation of individualistic expressive values shape these demographic transitions, but also the reverse holds: demographic developments shape values, enter political debates and change ideational landscapes and “mindscapes”.

Thirdly, that such developments are not idiosyncratic but can be enacted in many different settings: in Scandinavian and European welfare states as well as in the deregulated US market economy or in formerly communist Central Europe. More research is needed on the subject, but industrial or urban Far Eastern populations are the next likely candidates for SDT features to spring up.

Fourthly, that the essence of “*conjunctural unfolding of analogous causal processes*” (terminology borrowed from W.H. Sewell Jr. , 2005: 121) can be captured by simpler formal models of the “middle range type”, provided that these are not deterministic or teleological, offer analytical insights and indicate pathways for further empirical exploration, and leave room for case-specific and more “eventful” narratives.

## **6. Acknowledgements**

The analysis of the US spatial data for the 3141 counties was contributed by Lisa Neidert of the Population Studies Center of the University of Michigan (cf. Lesthaeghe and Neidert, 2006), and the statistical results from the European Values Surveys were produced by Johan Surkyn (see Surkyn and Lesthaeghe, 2004) of the Interface Demography of the Free University of Brussels (VUB).

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## 8. Appendix

The results of the factor analyses performed for the demographic indicators and all 3141 counties can be presented in the forms of maps. All maps are based on the Jenks algorithm of class boundaries determination. This algorithm ensures maximal homogeneity within classes and maximal heterogeneity between them. The units are standard deviations (means are all = zero). The maps are contributed by Lisa Neidert of the Population Studies Center of the University of Michigan.

\* Map 1 represents the *overall SDT factor* scores, with blue shades typical for counties that are further advanced on the SDT and red shades for those with low SDT scores. These scores are the dependent variable in the analysis of section 3.5. We have chosen the color scheme analogously to the blue (Democrat) and red (Republican) codes widely used in the mapping of the US election results.

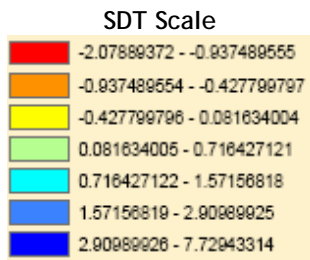
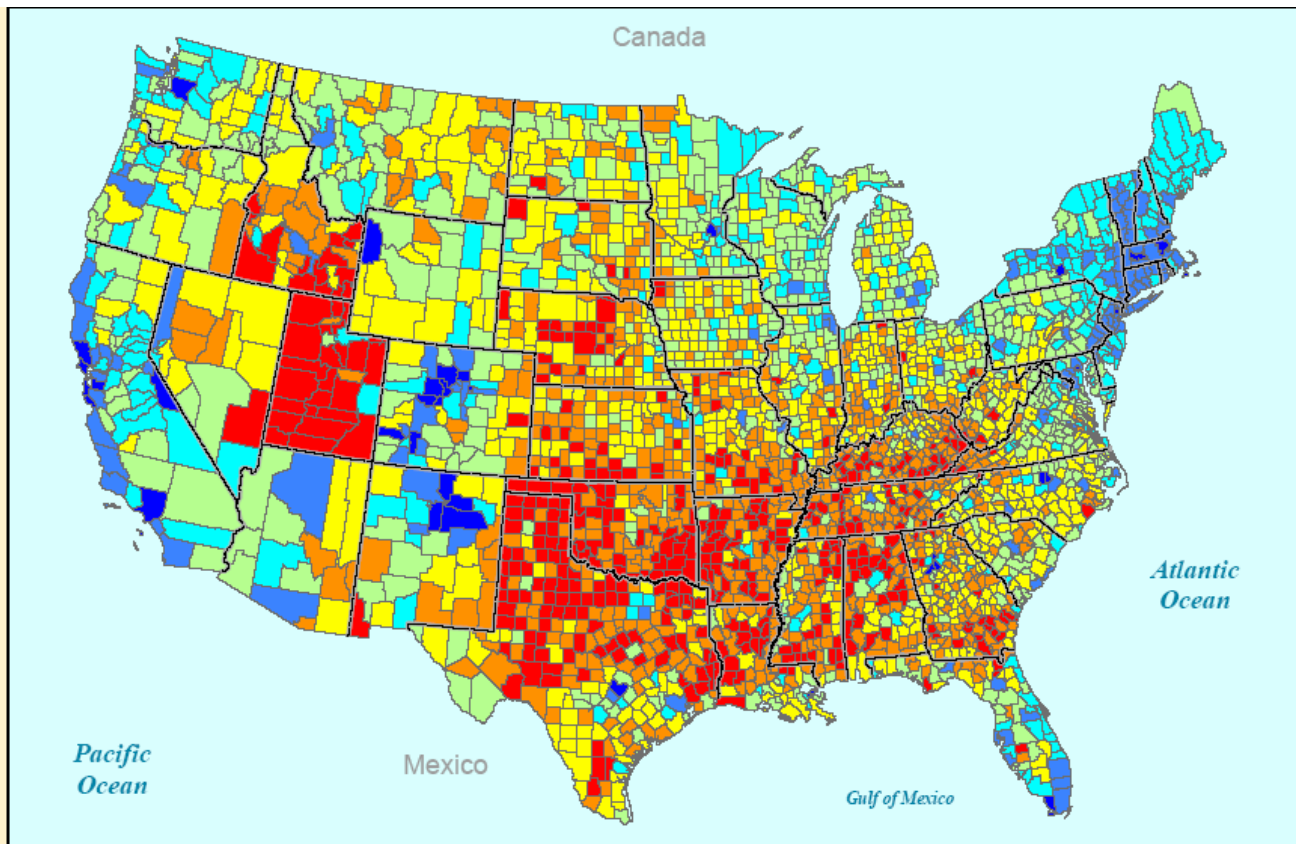
\* Map 2 represents the second factor, i.e. the degree of *vulnerability* of young women and children, with red indicating high values and blue ones indicative of low factor scores (also defined in section 3.5).

\* Map 3 gives the SDT-component of *nuptiality and fertility postponement* (blue = late schedules);

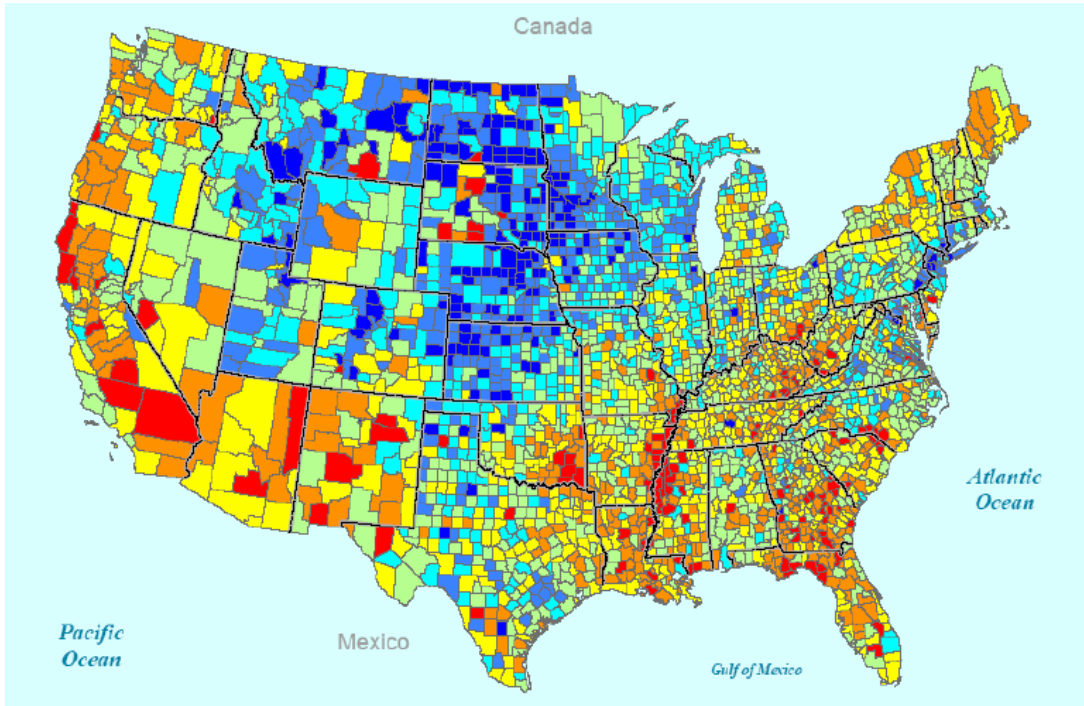
\* Map 4 captures the SDT-component of household formation on the basis of *unmarried cohabitation* (blue = less married couples, more cohabitation).

Maps 3 and 4 are two correlated sub-dimensions ( $r = +.68$ ) of the overall SDT factor depicted in Map 1 (see Lesthaeghe and Neidert, 2006).

Map 1: Spatial Distribution of the SDT Factor for US counties



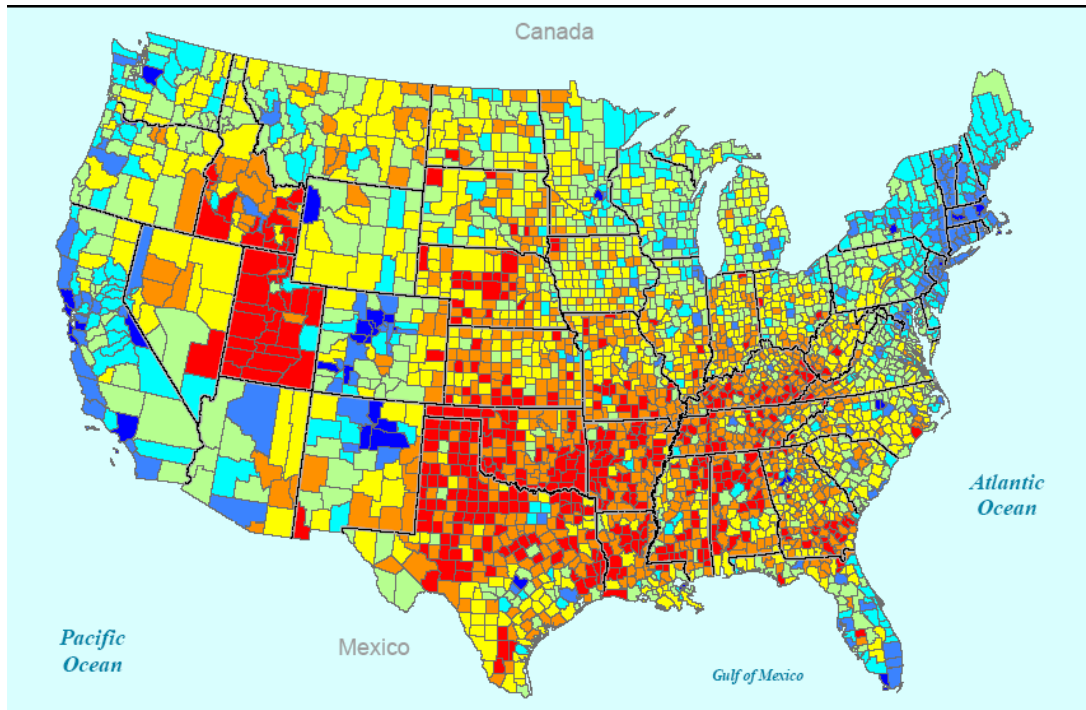
Map 2: Spatial Distribution of the Mother/Child Vulnerability Factor, US Counties



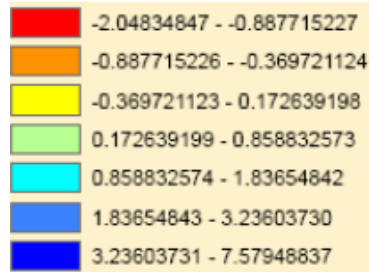
### Vulnerability Scale

Red	1.53504149 - 5.60435051
Orange	0.816789613 - 1.53504148
Yellow	0.261585123 - 0.816789612
Light Green	-0.303388680 - 0.261585122
Cyan	-0.958942758 - -0.303388681
Blue	-1.70236097 - -0.958942757
Dark Blue	-3.44304575 - -1.70236098

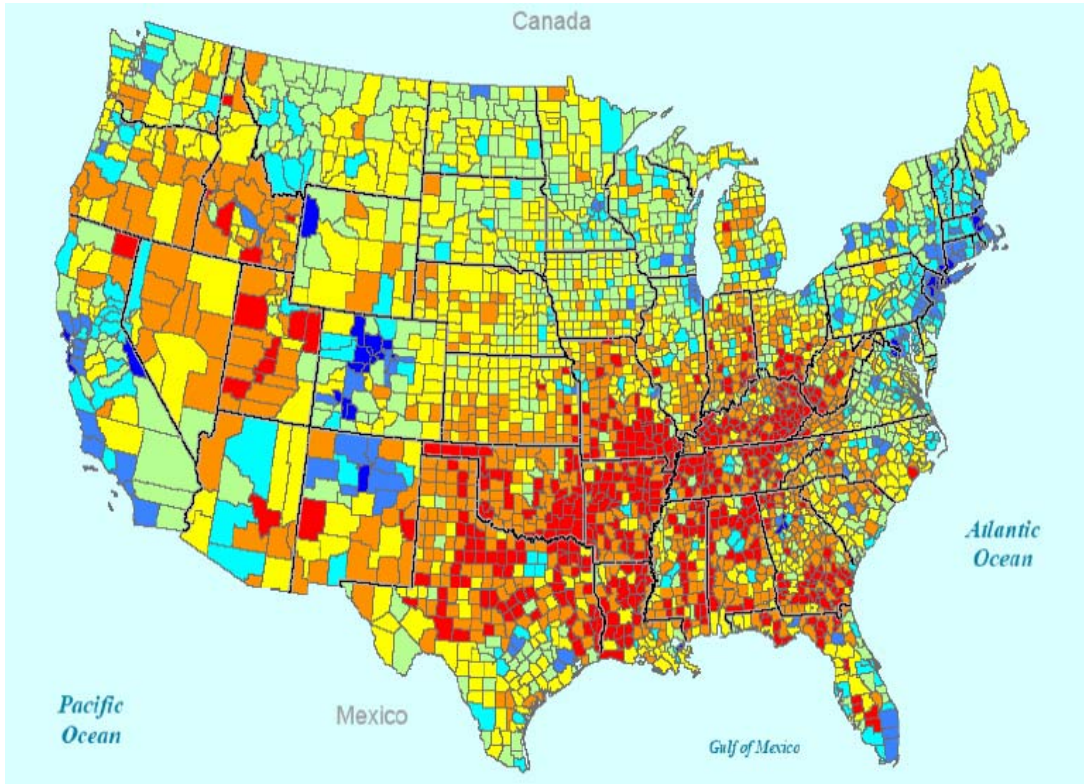
Map 3: Spatial Distribution of the Postponement Component of the SDT Factor for US Counties










#### Postponement Scale



Map4 : Spatial Distribution of the Cohabitation Component of the SDT Factor for US Counties



#### Cohabitation Scale

	-2.83982494 - -1.18009073
	-1.18009072 - -0.550618194
	-0.550618193 - -0.049039148
	-0.049039147 - 0.533270350
	0.533270351 - 1.39007037
	1.39007038 - 2.90967492
	2.90967493 - 9.24756561















