

APPENDIX G
MODERNIZATION THEORY OF DEVELOPMENT
FINDINGS AND DISCUSSION ON CULTURAL VALUES

Modernization theory evolved from two ideas about social change developed in the nineteenth century: the conception of *traditional vs. modern* societies, and *positivism* that viewed development as societal evolution in progressive stages of growth (Deutsch 1961; Rostow 1960; Ruttan 1959). In Modernization theory, problems that held back the industrialization of poor countries were related to the “irrational” way in which resources were allocated in a traditional society. Traditional societies became modern by rationalizing resource allocation, and by the elimination of cultural, institutional and organizational roadblocks that did not allow countries to develop. Developing countries with traditional societies could evolve by starting in a stage with an *undeveloped* and traditional society, and through an evolutionary linear process change its society by rationalizing it, becoming a country in a stage with a modern and developed society. The theory identified different stages, variables and process through which a society develops. Positivist evolution implied that all societies would pass through the same set of stages that the western society had passed: from a traditional to a modern society. The modernization stages were: 1) the traditional society, 2) preconditions for take-off, 3) take-off, 4) the drive to maturity, and 5) the age of high mass consumption. These five stages of modernization were known as Rostow's stage theory (Rostow 1960).

Research carried out in the 1970s focused on exploring the characteristics of a modern man for the construction of an overall measure of modernity. Modernization research suggested that the personality qualities of the modern man did not differ across occupations, cultures or countries, and included openness to new experience, belief in efficacy of medicine and science, and high exposure to mass media. These characteristics were explained largely by variables such as education, factory experience, and urbanization. Macro-structural forces such as urbanization were important in explaining the variance in individual social behavior, but only in conjunction with the micro-structural individual forces such as education and factory-experience that shape attitude, values, and behavior (Harrison 1985; Inglehart 2000a; Inkeles 1969; Inkeles and Smith 1974; Kahl 1968; Roberts and Hite 2000; Rogers 1995).

The consequences in society of the shift from a manufacturing society to a knowledge society were further explored by Daniel Bell in “The Coming of the Post-Industrial Society” originally published in 1973. Bell's account of the post-industrial society emphasize long term economic changes in the economic structure that drive social and political change. Structural changes in the workforce and society associated with socioeconomic development will therefore provide the conditions most conducive to widespread access to digital information and communication technologies, which in turn will allow adaptation and creation of new knowledge. One of Bell's purposes was to examine changes in the social structure, i.e. the way in which the occupational system

was reworked by the way in which the economy was being transformed, warning that these changes in social structure would not necessarily “determine corresponding changes in the polity or the culture.” Thus Bell rejected the idea for example, that capitalism in countries like China would somehow automatically produce a democratic polity or a liberal culture (Bell 1999).

Following a Modernization tradition, cultural values are enduring influence on society. There are generally two lines of thought regarding the relation of culture and development: one states that development occurs when rational, tolerant, trusting and post-modern values are present in a society (La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1997); the other states that culture is “path dependent” in societies, in other words, societies have highly distinctive value systems that persist even when controlling for the effects of development (Inglehart 2000c). So, one line of thought states that culture matters *because* it explains differences in development, whereas the other line of thought states that *in spite of* differences in development, cultural values still persist. Are cultural values a *determinant* or a *product* of development? Maybe both.

Recent studies suggest that there is evidence that the broad cultural heritage of a society leaves an imprint on values that endure despite the forces of modernization, in other words cultural change depends on a society’s cultural heritage (Inglehart 2000b; Inglehart 2000c). Cultural values, in this case, refer to the values that classify societies in traditional or rational societies. According to Inglehart, worldviews of the peoples of developed societies differ systematically from those of developing societies. The two most salient dimensions reflect national polarization between “traditional” versus “rational” orientations towards authority; and “survival” versus “self-expression” values. According to Inglehart, each society can be located on a global map of cross-cultural variation based on these two dimensions illustrated in Figure G.1.

The “Global Cultural Map” illustrated in Figure G.1. shows the location of 65 societies on the two dimensions generated by national-level factor analysis. According to research conducted by Inglehart, cross-national variation is closely associated with a society’s cultural heritage. This suggests both massive cultural change, and the persistence of distinctive traditional values. This confirms partially Modernization theory in the sense of a relation between a post-industrial society and shifts from traditional societies to more rational ones. However, these shifts are dependent on the cultural heritage. This implies several modifications of Modernization theory: 1) it does not follow a deterministic linear path (such as the case with the former Soviet Union that has become more traditional due to its economic collapse), 2) societies do not become more rational (secular) as they become more industrialized (religious beliefs persist in spite of advances in industrialization), 3) cultural change is depends on cultural heritage (Catholicism, Protestantism, Confucianism or Islam), and 4) cultural change does not mean an “Americanization” of societies. In fact, the United States exhibits a more traditional society than equally prosperous societies of Northern Europe (Inglehart 2000c). Despite these changes, Modernization theory is supported in the sense that economic development is associated with major changes in prevailing values and beliefs.

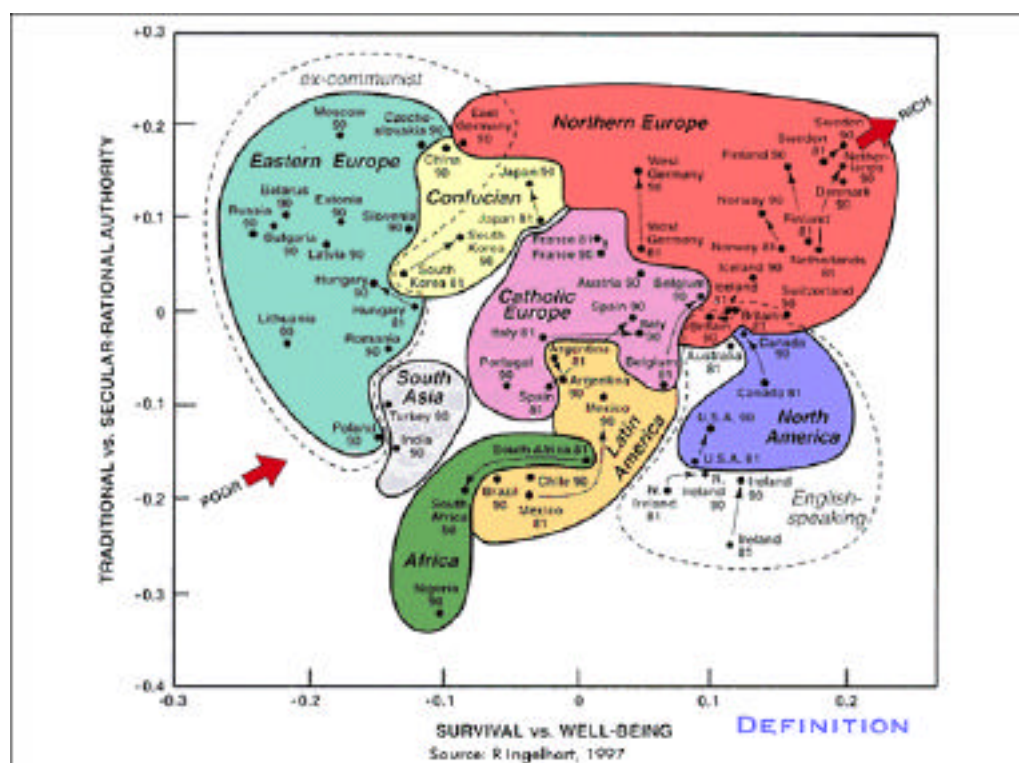


Figure G.1. Locations of 65 societies on two dimensions of cross-cultural variation: World Values Surveys

From a Modernization perspective, the degree of industrialization, urbanization, and cultural values are the main indicators of changes in development in a country. Therefore, the level of use and access to information technologies within a society is captured by these indicators, but use is basically determined by the degree of rationalization of a society and cultural values towards science and technology. According to Modernization theory, changes in openness to ideas and a more global sense of belonging would occur when changes in development occurred.

Modernization also implies that a society's culture value system and institutional configuration determines its potential for development. It places the ideas and differing value systems, and not the material conditions, at the center of the explanation of the disparities in development. This was considered by some as an oversimplified and generalized theory with strong racial stereotype and cultural bias (Cardoso 1972; Chase-Dunn 1975; Janvry and Garramon 1977; Street and James 1979; Valenzuela and Valenzuela 1979). It ignored specific historical experiences and phases of prosperity in societies that had not changed their "traditional culture". Modernization theory was attacked as *ahistorical*, (ignoring phases of prosperity from a broader historical review), and *ethnocentric* (assuming that only one culture and one path were ways to development). World Systems theory contested Modernization theory by suggesting that

development differences were largely explained by taking into account the initial conditions and the relations of dependency in trade relations among countries in a whole system, i.e. the “world system”. According to World Systems Theory the global digital divide is really a reflection of the divides already present better explained by the degrees of *peripherilization* (a country’s position in the core, semi-periphery or periphery). Countries in the wealthy core were bound to forge ahead in the use of new information technologies leaving behind countries in the deprived and dependent periphery. In consequence, the digital divide is a predicted consequence of the structure of the world system, in which less developed countries become more peripherilized when they are penetrated by interests located in the core: information and communication technologies are no exception to the core-periphery relation.

Despite the differences in theory, empirical evidence has argued against the mutual exclusiveness of Modernization and World System theories on development, since both theories share some of the same variables to represent macrostructural processes (Moaddel 1994).

Marshall McLuhan's slogans "the medium is the message" and "the global village" are now recited like mantras everywhere. Did the global digital divide occur while changes in a global sense of belonging were occurring among individuals around the world? Or, on the contrary, did the global digital divide occur while individuals increased their local sense of belonging? Has the global divide occurred while mass attitudes towards science and technology were changing? Did it occur while “openness to new ideas” was changing among individuals around the world? Are there differences between answers furnished by populations from developed and developing countries? These are culture-related research questions explored¹ in this study. The relations among the cultural values and attitudes towards science and technology, openness to new ideas and global/local sense of belonging were in light of the degree of “rationalization” in a society, and in relation to the global digital divide.

Findings on “rational’ vs. “traditional” societies

In 1990, the overall correlation (0.407, $p < 0.001$) between societies with more “rational” orientations towards authority and higher levels of human development confirms what Modernization theory predicts, and what has been reported in the literature: societies with higher levels of rationalization have lower levels of positive attitudes towards science and technology (Inglehart 2000b; Inglehart 2000c). By 1997, the correlation was even stronger (0.508, $p < 0.001$). However, a different picture emerges when we perform the same exercise for developed countries versus developing ones. First, for 1990 and 1997, in developing and developed countries the correlations

¹ Please see Appendix J for a description of the items selected from the World Values Survey to test cultural values and mass attitudes.

become statistically insignificant². Second, in 1990 the correlations become smaller and negative in developed countries (-0.069), and positive (0.207) in developing countries. Similarly in 1997 the findings are also confirmed when correlating *changes* in rational attitudes towards authority and *progress* in human development from 1990 to 1997 for all countries, for developing countries, and developed countries. Furthermore, when comparing OECD versus Easter Europe countries we obtain differing results. In sum, no association could be established between more rational societies and more developed ones.

Findings in attitudes towards science and technology

In 1990, the overall correlation between societies with more positive attitudes towards science (-0.559, $p < 0.001$) and positive attitudes towards technology (-0.438, $p < 0.001$) correlate negatively with higher levels of human development. By 1997, the values and significance of the correlations between positive attitudes towards science (-0.379, $p < 0.05$) and positive attitudes towards technology had dropped (-0.363, $p < 0.05$) but were still significant. These results confirm that societies with lower levels of human development will have more positive attitudes towards science and technology. However, there are differences between the results obtained for developed and developing countries. In 1990 for developed countries, there is a strong negative correlation between positive attitude towards technology and human development (-0.483, $p < 0.01$), that becomes even stronger for 1997 (-0.790, $p < 0.001$). Likewise, in 1990 for developed countries a statistically insignificant negative correlation between positive attitudes towards science and human development (-0.300), becomes significant and stronger in 1997 (-0.584, $p < 0.01$). In contrast, in 1990 developing countries start with a negative correlation between positive attitudes towards technology and human development (-0.643, $p < 0.05$) that becomes insignificant and smaller in 1997 (-0.057). Correlations between positive attitudes towards science and human development in developing countries are negative and not statistically significant in 1990 (-0.605), nor in 1997 (-0.207). This is equally true when correlating *increases* in positive attitudes towards science and technology in developing countries and *progress* in human development, as well as *increases* in positive attitudes towards science and technology and *progress* in human development in developed countries. The exception to this is a high correlation between increases in positive attitudes towards science and *progress* in human development in developed countries (-0.819, $p < 0.001$).

Findings in openness to new ideas

² Maybe due to a smaller number of observations

In all countries, the correlations between openness to new ideas in 1990 and 1997 and positive attitudes towards science, as well as positive attitudes towards technology are not statistically significant (-0.252 and 0.250 respectively). An analysis of the changes from 1990 to 1997 yield similar results. The situation does not change very much when comparing developed and developing countries in 1990, the exception being a strong negative correlation between openness to new ideas and positive attitudes towards technology in developing countries (-0.632, $p < 0.05$). However, in 1997, the differences between developing and developed countries emerge. While in 1997, developing countries have no statistically significant correlations between openness to ideas, human development, positive attitudes towards science, and positive attitudes towards technology; developed countries do show a high correlation between openness to new ideas and human development (0.571, $p < 0.001$) and a high negative correlation between openness to ideas and positive attitudes towards technology (-0.617, $p < 0.01$). This is confirmed by a positive correlation between increase in openness to new ideas from 1990 to 1997 and progress in human development from 1990 to 1997 (0.500, $p < 0.05$) in developed countries.

In 1990, an overall sense of belonging was not statistically significantly correlated with human development nor with positive attitudes towards technology. It was however, positively correlated with more rational attitudes towards authority (0.447, $p < 0.01$), negatively correlated with positive attitudes towards science (-0.463, $p < 0.01$) and negatively correlated with openness to new ideas (-0.370, $p < 0.05$). By 1997, all of the above were statistically insignificant except for a positive correlation between a global sense of belonging and rational attitudes toward authority (0.459, $p < 0.01$). Overall in 1997, there is a positive correlation between increases in a global sense of belonging and increases in positive attitudes towards science (0.580, $p < 0.01$). Once again, comparisons between developed and developing countries produce different results.

In 1990, in developing countries a more global sense of belonging is positively correlated with more rational attitudes towards authority (0.691, $p < 0.05$) and negatively associated with openness to ideas (-0.713, $p < 0.05$). By 1997, in developing countries, these correlations had changed to become statistically insignificant, whereas the correlation between global sense of belonging and positive attitudes towards technology (0.549, $p < 0.05$) had become statistically significant. An analysis of the increases in the global sense of belonging and increases in positive attitudes towards science show a strong positive correlation (0.758, $p < 0.05$) in developing countries. On the other hand, in 1990, in developed countries, a global sense of belonging was correlated negatively to human development (-0.467, $p < 0.01$), positively correlated with rational attitudes towards authority (0.369, $p < 0.05$) and negatively correlated with positive attitudes towards science (-0.400, $p < 0.05$). In 1997, correlations became statistically insignificant except for a positive correlation between a global sense of belonging and human development (0.537, $p < 0.01$).

Discussion

Rational societies cannot be associated with more developed societies

The findings from this study do not support the assumptions of modernization theory. More rational societies are not necessarily those that have higher levels of development. Rational and traditional societies have different levels of development. It will be interesting to test whether this had changed by the end of the decade with data available from 1999-2000³.

Correlations change when disaggregating by developed/developing countries

The first observable trend in the findings, is that an overall picture of human development, rational attitudes towards authority, positive attitudes towards science and technology, openness to ideas, and a global sense of belonging do not reflect the underlying differences between developed and developing countries. In an overall picture, one would conclude that the results are consistent with the reported findings in the literature in which more traditional societies have more positive attitudes towards science and technology. But when analyzing the same correlations among developed and developing countries, all ten correlations become statistically insignificant⁴, some change direction, some increase in strength and some decrease in strength.

Changes in cultural values occurred during 1990-1997

The other major trend is that the situation changed significantly from 1990 to 1997. Even though the time period is short for analyzing changes in cultural values and attitudes, the results from 1990 and 1997 are very different. The statistical significance, as well as the direction of the correlations change. This finding holds for developing and developed countries alike. Societies changed significantly from their attitudes towards science, attitudes towards technology, openness to new ideas and global sense of belonging from 1990 to 1997 regardless of belonging to developed or developing countries. The analysis of the correlations between changes (increases in attitudes and progress in development) also supports this finding.

³ The World Values Survey data for 1999-2000 has been announced for publication soon.

⁴ With the exception of a more global sense of belonging and rational attitudes towards authority in developing countries in 1990, significant at $p < 0.05$

Science and technology became strongly correlated in 1997

Another suggestive finding is that even though in 1990 the correlations between positive attitudes towards science and positive attitudes towards technology were not significant (for all countries, for developing countries, and for developed countries), in 1997 this had changed dramatically to become significant for all countries, as well as for developing and developed countries; the correlations becoming stronger in developing countries. While in 1990 attitudes towards science were somewhat independent of attitudes towards technology, in 1997 they became correlated. This suggests that by the end of the decade, societies around the world became increasingly aware of the linkages between science and technology, regardless of where they lived (developing or developed countries). This is especially true in an age when technological progress requires expensive scientific equipment and well-provisioned research laboratories. By the end of the decade technological change and its increasing reliance on science had changed mass attitudes towards science and technology, linking them more strongly than in the beginning of the decade.

Poor linkages to the global digital divide

Finally, progress in human development in developing countries, and changes in cultural values such as attitudes towards science, attitudes towards technology, openness to new ideas and global sense of belonging were not found to be statistically significant⁵ with a core computing and networking national capacity nor the IT-infrastructure, nor human and intellectual capital.

⁵ With exceptions discussed in Chapter 6.